Association of Computer Users
4800 Riverbend Road • Post Office Box 9003 • Boulder Colorado 80301 • 303/443-3600

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ACU VOLUME 1.0 MEMBERSHIP MATERIALS

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Update No. M47

An independent non-profit corporation
Formerly The Association of Time-Sharing Users and The Association of Small Computer Users

Association of Computer Users

certifies that

MEMBER'S SIGNATURE

is a member in good standing for the year 1982

ACU BOARD OF DIRECTORS — BOULDER, COLORADO

Association of Computer Users
4800 Riverbend Road • Post Office Box 9003 • Boulder Colorado 80301 • 303/443-3600

ARTICLES OF INCORPORATION
April 2, 1979

BY-LAWS
April 4, 1979

THE ASSOCIATION OF COMPUTER USERS, INC.
ARTICLES OF INCORPORATION

The undersigned person acting as incorporator under the Colorado Non-profit Corporation Act, signs, and, acknowledges the following Articles of Incorporation for such corporation.

First: The name of the corporation is

THE ASSOCIATION OF COMPUTER USERS, INC.

Second: The period of duration is perpetual.

Third: The purposes for which the corporation is organized are:

(a) To act as non-profit independent computer user association, representing the needs of its members and promoting the free interchange of ideas about products and services.
(b) To promote the use of computers for improved decision making and to encourage continuous improvement in the efficiency and capability of computer products and services, and to encourage an increase in the range of products and services available to individual computer users.
(c) To act as a clearing house and publisher of information about computer products and services.
(d) To sponsor public discussion forums, panels and lectures concerning the new computer technologies and methods of evaluating such technologies.
(e) To act as an educational and scientific organization under the rules for a 501-C-3 organization as defined by the Internal Revenue Service.
(f) To conduct or engage in all lawful activities within or without the United States in furtherance of the foregoing purposes, or incidental thereto.

Fourth: The association shall have the following classes of membership:

(a) *Regular Membership* — Any individual who is a user of computer equipment or related services, and who is not primarily involved in the sale of computer equipment, software, or related services. Each regular member is entitled to one vote on each matter submitted to a vote of members.
(b) *Associate Membership* — Any individual who is primarily involved in the sale of computer equipment, software, or related services. Associate members are ineligible to hold office and shall not be entitled to vote on any matter.
(c) *Corporate Associate Membership* — Any corporation (or division of any corporation) which is primarily involved in the sale of computer equipment, software, or related services. Corporate Associate Members have no voting rights and they and their designees are ineligible to hold office.

Fifth: No part of the income or accumulated funds of the corporation will inure to the benefit of any members or individuals, and upon dissolution of the association, its then existing net assets shall be distributed among the then existing members ratably in proportion to their respective contributions or as a court might direct.

Sixth: The address of the initial registered office and the principal office of the corporation in Colorado is 1690 38th Street, Boulder, County of Boulder Colorado 80301 and the name of its initial registered agent at such address is Hillel Segal.

Seventh: The number of directors constituting the initial board of directors of the corporation is eight, and the names and addresses of the persons who are to serve as the initial directors are:

NAME	*ADDRESS*
Earl H. Carroll	473 Pontiac, Denver, Colorado 80220
Larry G. Leslie	UpJohn Company - 7171 Portage Road, Kalamazoo, Michigan 49001
Stuart J. Lipoff	Arthur D. Little, Inc. - 20 Acorn Park, Cambridge, Massachusetts 02140
Bennett Meyer	Singer-Kearfott - 150 Totowa Road, Wayne, New Jersey 07470
Martin J. Neville	Burns, Van Kirk, Greene & Kafer - 521 Fifth Ave., New York, New York 10017
Hillel Segal	1690 38th Street, Boulder, Colorado 80301
Leon P. Stevens	Standard Oil Co. - 200 East Randolph St., Chicago, Illinois 60601
David E. Wilson	P.S. Ross & Partners - P.O. Box 12, First Canadian Place, Toronto, Ontario, Canada

Hillel Segal

Hillel Segal,
Incorporator

BY-LAWS
OF
THE ASSOCIATION OF COMPUTER USERS, INC.

April 4, 1979

Article I
NAMES AND OFFICES

Section 1. The name of the Association is

THE ASSOCIATION OF COMPUTER USERS, INC.

Section 2. The headquarters office of the Association shall be located in the City of Boulder, Colorado.

Section 3. The Association may also have offices at such other places both within and without the State of Colorado as the Board of Directors (also known as the "Council") may from time to time determine or the business of the Association may require.

Article II
PURPOSES

The purposes of the Association shall be those stated in its Certificate of Incorporation, and any amendments thereto, as filed with the Secretary of State, State of Colorado. These are:

(a) To act as non-profit independent computer user association, representing the needs of its members and promoting the free interchange of ideas about products and services.

(b) To promote the use of computers for improved decision making and to encourage continuous improvement in the efficiency and capability of computer products and services, and to encourage an increase in the range of products and services available to individual computer users.

(c) To act as a clearing house and publisher of information about computer products and services.

(d) To sponsor public discussion forums, panels and lectures concerning new computer technologies and methods of evaluating such technologies.

(e) To act as an educational and scientific organization under the rules for a 501-C-3 organization as defined by the Internal Revenue Service.

(f) To conduct or engage in all lawful activities within or without the United States in furtherance of the foregoing purposes, or incidental thereto.

Article III
ORGANIZATIONAL STRUCTURE

Section 1. The Association shall serve as a parent organization for regional groups of members known as Chapters, and also groups based upon functional discipline known as Sections. The Chapters and Sections shall provide a forum for the direct interchange of ideas and information about computer products and related services. The function of the parent organization shall be to support the Chapters and Sections, to gather information centrally regarding computer products and related services and to disseminate relevant material to all members.

Section 2. The Board may authorize members to form Chapters based on geographic areas and Sections based upon functional discipline. The Chapters or Sections may determine their own organizational structure provided their affairs are conducted in accordance with the policies set forth by the Board of Directors, in the parent organization's Certificate of Incorporation and these By-Laws. Each Chapter and Section may choose their own officers and directors. At the annual meeting of the Association each Section shall be eligible to elect a Chairman and Vice Chairman who will both serve on the Board of Directors of the Association. All officers and directors of the Association including officers of each Chapter and Section, shall be required to disclose to the Board of Directors of the Association the existence of the receipt of any complimentary goods or services or of any financial or business relationship with any computer vendor, supplier or related company.

Section 3. Members of each Chapter and Section must also be members of the Association.

Section 4. With the approval of the Board of Directors, dues, membership fees, and special assessments may be levied by the Association, the Chapters, or the Sections.

Article IV
MEMBERSHIP

Section 1. The Association shall have the following classes of membership and any additional classes as may be prescribed by a Resolution of the Board of Directors.

(a) **Regular Membership** - Any individual who subscribes to the purposes of the Association, as set forth in the Certificate of Incorporation, who is a user or prospective user of computer equipment or related services, and who is not primarily involved in the sale of computer equipment, software, or related services. Each regular member shall have all the privileges and voting rights as specified in these By-Laws.

(b) **Associate Membership** - Any individual who subscribes to the purposes of the Association as set forth in the Certificate of Incorporation, and who is primarily involved in the sale of computer equipment, software, or related services. Associate members may not hold office and have no voting rights. Associate Members may not promote specific products or services while attending Association functions, unless called upon by regular members to describe a particular product.

(c) **Corporate Associate Membership** - Any corporation (or division of any corporation) which subscribes to the purposes of the Association, as set forth in the Certificate of Incorporation, which is primarily involved in the sale of computer equipment, software, or related services. Corporate Associate Members have no voting rights, and their designees may not hold office.

Section 2. Candidates may apply for membership by mailing a completed membership application together with dues or membership fees as prescribed by the Board of Directors to the office of the Association. The Executive Director may admit candidates to membership upon determining that the requisite membership qualifications have been met.

Section 3. Each member agrees to be bound by these By-Laws and all amendments thereof upon being admitted to membership in the Association.

Section 4. Any member of the Association may withdraw from membership by tendering a written resignation to the Board.

Section 5. A member may be suspended, or his membership terminated, for failure to pay dues or assessments, or for a violation of any of the provisions contained in the Certificate of Incorporation or By-Laws. A suspension or termination shall require a two-thirds vote of the Board of Directors.

Section 6. Any member whose membership in this Association shall have terminated by resignation or other cause shall forfeit thereby all interest in any and all funds, property, rights and interests belonging to this Association.

Article V
ANNUAL MEETINGS OF MEMBERS

Section 1. All annual meetings of members for the election of Directors and those officers specified in Article XII, may be held at such place within or without the State of Colorado as shall be stated in the notice of the meeting or in a duly executed waiver of notice thereof.

Section 2. Annual meetings of members shall be held on the second Thursday in April if not a legal holiday, and if a legal holiday, then on the next secular day following, at 10:00 a.m., at which shall be elected by a plurality vote, a Board of Directors, and transact such other business as may properly be brought before the meeting.

Section 3. Written or printed notice of the annual meeting stating the place, date and hour of the meeting shall be delivered not less than ten nor more than fifty days before the date of the meeting, either personally or by mail, by or at the direction of the president, the secretary, or the officer or person calling the meeting, to each member entitled to vote at such meeting.

Article VI
SPECIAL MEETINGS OF MEMBERS

Section 1. Special meetings of members may be held at such time and place within or without the State of Colorado as shall be stated in the notice of the meeting or in a duly executed waiver of notice thereof.

Section 2. Special meetings of the members, for any purpose or purposes, unless otherwise prescribed by statute or by the Certificate of Incorporation, may be called by the president, the Board of Directors, or by one-third of the members eligible to vote.

Section 3. Written or printed notice of a special meeting stating the place, date and hour of the meeting and the purpose or purposes for which the meeting is called, shall be delivered not less than ten nor more than fifty days before the date of the meeting, either personally or by mail, by, or at the direction of, the president, the secretary, or other officer or person calling the meeting, to each member entitled to vote at such meeting. The notice should also indicate that it is being issued by, or at the direction of the person calling the meeting.

Article VII
QUORUM AND VOTING OF MEMBERS

Section 1. One-tenth of all Regular Members represented in person or by proxy shall constitute a quorum at all meetings of the members for the transaction of business, except as otherwise provided by statute or by the Certificate of Incorporation. If, however, such quorum shall not be present or represented at any meeting of the members, the members present in person or represented by proxy shall have power to adjourn the meeting from time to time, without notice other than announcement at the meeting, until a quorum shall be present or represented. At such adjourned meeting at which a quorum shall be present or represented any business may be transacted which might have been transacted at the meeting as originally notified.

Section 2. If a quorum is present, the affirmative vote of a majority of the members entitled to vote at the meeting shall be the act of the members, unless the vote of a greater or lesser number of members is required by law or the Certificate of Incorporation.

Section 3. Each member having voting power shall be entitled to one vote on each matter submitted to a vote at a meeting of members. A member may vote either in person or by proxy executed in writing by the member or by his duly authorized attorney-in-fact. Only regular members shall have the right to vote.

Section 4. The Board of Directors in advance of any members' meeting may appoint one or more inspectors to act at the meeting or any adjournment thereof. If inspectors are not so appointed, the person presiding at a members' meeting may, and, on the request of any member entitled to vote thereat, shall appoint one or more inspectors. In case any person appointed as inspector fails to appear or act, the vacancy may be filled by the Board in advance of the meeting or at the meeting by the person presiding thereat.

Section 5. Whenever members are required or permitted to take any action by vote, such action may be taken without a meeting or written consent, setting forth the action so taken, signed by all of the members entitled to vote thereon.

Article VIII
BOARD OF DIRECTORS
(THE COUNCIL)

Section 1. The number of Directors shall be not less than five and shall not exceed the maximum number as fixed from time to time by Resolution of the Board. In the absence of such a Resolution, the maximum number shall be fourteen. Directors shall be at least twenty-one years of age and need not be residents of the State of Colorado. The Directors shall include the President, Vice President, Secretary, Treasurer and Executive Director of the Association, and the Chairman, Vice Chairman and Executive Director of each of its Sections. The Directors shall be elected at the annual meeting of the members, except as hereinafter provided, and each Director elected shall serve until the next succeeding annual meeting and until his successor shall have been elected and installed.

Section 2. Any or all of the Directors may be removed, with or without cause, at any time by the vote of the regular members at a special meeting called for that purpose.

Section 3. Newly created Directorships resulting from an increase in the number of Sections authorized by the Board, and all other vacancies among Directors, shall be filled by the current Board. A Director appointed by the Board to fill a newly created position shall serve until the next succeeding annual meeting of members and until his successor shall have been elected and installed.

Section 4. The business affairs and the activities of the Association shall be managed by its Board of Directors which may exercise all such powers of the Association and do all such lawful acts and things as are not by statute or by the Certificate of Incorporation or by these By-Laws directed or required to be exercised or done by the members.

Section 5. The Directors may keep the books of the Association, except such as are required by law to be kept within the State, outside the State of Colorado, at such place or places as they may from time to time determine.

Section 6. The Board of Directors, by the affirmative vote of a majority of the Directors then in office, shall have authority to establish reasonable compensation, if any, of all Directors for services to the Association as Directors, officers or otherwise.

Section 7. The Board of Directors may also be known as the "Council" of the Association and use of the word "Council" for any corporate purpose shall be equivalent to use of the words "Board of Directors."

Article IX
MEETINGS OF THE BOARD OF DIRECTORS (COUNCIL)

Section 1. Meetings of the Board of Directors, regular or special, may be held either within or without the State of Colorado.

Section 2. The first meeting of each newly elected Board of Directors shall be held immediately after the annual members' meeting electing such Board and no notice of such meeting shall be necessary to the newly elected Directors in order legally to constitute the meeting, provided a quorum shall be present, or it may convene at such place and time as shall be fixed by the consent in writing of all the Directors.

Section 3. Regular meeting of the Board of Directors may be held upon such notice, or without notice, and at such time and at such place as shall from time to time be determined by the Board.

Section 4. Special meetings of the Board of Directors may be called by the president on at least five business days' notice to each Director, either personally or by mail or by telegram; special meetings shall be called by the president or secretary in like manner and on like notice on the written request of one-half of the Directors currently serving on the Board of Directors.

Section 5. Notice of a meeting need not be given to any Director who submits a signed waiver of notice whether before or after the meeting, or who attends the meeting without protesting, prior thereto or at its commencement, the lack of notice.

Neither the business to be transacted at, nor the purpose of, any regular or special meeting of the Board of Directors need be specified in the notice or waiver of notice of such meeting.

Section 6. One-third of the Directors shall constitute a quorum for the transaction of business unless a greater or lesser number is required by law. The vote of a majority of the Directors present at any meeting at which a quorum is present shall be the act of the Board of Directors, unless the vote of a greater number is required by law or by the Certificate of Incorporation. If a quorum shall not be present at any meeting of Directors, a majority of the Directors present may adjourn the meeting from time to time, without notice other than announcement at the meeting, until a quorum shall be present.

Article X
EXECUTIVE COMMITTEE

Section 1. The Board of Directors, by Resolution adopted by a majority of the entire Board, may designate an executive committee and other standing committees, and each of which, to the extent provided in the Resolution, shall have all the authority of the Board, except as otherwise required by law. Vacancies in the membership of the committee shall be filled by the Board of Directors at a regular or special meeting of the Board of Directors. The executive committee shall keep regular minutes of its proceedings and report the same to the Board when required.

Article XI
NOTICES

Section 1. Whenever, under the provisions of the statutes or of the Certificate of Incorporation or of these By-Laws, notice is required to be given to any Director or member, it shall not be contrued to require personal notice, but such notice may also be given in writing, by mail, addressed to such Director or member, at his address as it appears on the records of the Association, with postage thereon prepaid, and such notice shall be deemed to be given at the time when the same shall be deposited in the United States mail. Notice to Directors may also be given by telegram.

Section 2. Whenever any notice of a meeting is required to be given under the provisions of the statutes or under the provisions of the Certificate of Incorporation or these By-Laws, a waiver thereof in writing signed by the person or persons entitled to such notice, whether before or after the time stated therein, shall be deemed equivalent to the giving of such notice.

Article XII
OFFICERS

Section 1. The officers of the Association to be elected by the members shall consist of a President, a Vice President, a Secretary and a Treasurer. The officer to be appointed by the Board of Directors shall be the Executive Director. Officers shall serve for a term of one (1) year and may be re-elected for additional terms of one (1) year each except for the Executive Director who may be appointed for a term of more than one year as determined by the Board of Directors.

Section 2. The Association's members at each annual meeting of members shall choose a President, Vice President, Secretary and Treasurer from among the members, and the members of each Section shall elect a Chairman and Vice Chairman from among the members of each respective Section. The Board of Directors shall appoint the Executive Director, who may or may not be a member, who also serves as Executive Director of each Section. The offices of President and Secretary may not be held by the same person.

Section 3. The Board of Directors may appoint such other officers and agents as it shall deem necessary who shall hold their offices for such terms and shall exercise such powers and perform such duties as shall be determined from time to time by the Board of Directors.

Section 4. Remuneration of any officers, employees or agents of the Association shall be fixed by the Board of Directors.

Section 5. The officers of the Association shall hold office until their successors are chosen and installed. Any officer may be removed at any time by the affirmative vote of a majority of the members. Any vacancy occurring in any office of the Association shall be filled by the Board of Directors and the newly appointed officer shall serve until the next annual meeting of the members.

PRESIDENT

Section 6. The President shall be the chief spokesman for the Association, shall preside at all general meetings of the members and the Board of Directors, and shall have other duties as prescribed by the Board.

VICE PRESIDENT

Section 7. The Vice President shall, in the absence or disability of the President, perform the duties and exercise the powers of the President and shall perform such other duties and have such other powers as the Board of Directors may from time to time prescribe.

EXECUTIVE DIRECTOR

Section 8. The Executive Director shall be the executive officer of the Association and each of its Sections, shall have

general and active management of the activities and the business of the Association and shall see that all orders and resolutions of the Board of Directors are carried into effect.

The Executive Director shall execute bonds, mortgages and other contracts requiring the seal of the Association, except where required or permitted by law to be otherwise signed and executed and except where the signing and execution thereof shall be expressly delegated by the Board of Directors to some other officer or agent of the Association.

SECRETARY

Section 9. The Secretary shall attend all meetings of the Board of Directors and all general meetings of the members and shall record all the proceedings in a book to be kept for that purpose. He shall give, or cause to be given, notice of all meetings of the members and special meetings of the Board of Directors, and shall perform such other duties as may be prescribed by the Board of Directors, under whose supervision he shall be. He shall have custody of the corporate seal of the Association and he shall have authority to affix the same to any instrument requiring it and, when so affixed, it may be attested by his signature. The Board of Directors may give general authority to any other officer to affix the seal of the Association and to attest the affixing by his signature.

TREASURER

Section 10. The Treasurer shall have the custody of the Association's funds and securities and shall keep full and accurate accounts of receipts and disbursements in books belonging to the Association and shall deposit all monies and other valuable effects in the name and to the credit of the Association in such depositories as may be designated by the Board of Directors.

Section 11. He shall disburse the funds of the Association as may be ordered by the Board of Directors, taking proper vouchers for such disbursements, and shall render to the Board of Directors at its regular meetings, or when the Board of Directors or the President so require, an account of all his transactions as Treasurer and of the financial condition of the Association.

Section 12. If required by the Board of Directors, he shall give the Association a bond in such sum and with such surety or sureties as shall be satisfactory to the Board of Directors for the faithful performance of the duties of his office and for the restoration to the Association, in case of his death, resignation, retirement or removal from office, of all books, papers, vouchers, money and other property of whatever kind in his possession or under his control belonging to the Association.

SECTION CHAIRMEN

Section 13. The persons elected as Section Chairmen shall be the chief spokesmen for each respective Section of the Association, and shall serve on the Board of Directors of the Association representing the Sections which elected them.

SECTION VICE CHAIRMEN

Section 14. The persons elected as Section Vice Chairmen shall, in the absence or disability of the respective Section Chairmen, be the chief spokesmen for each respective Section of the Association. The Section Vice Chairmen also serve on the Board of Directors of the Association representing the Sections which elected them.

Article XIII
GENERAL PROVISIONS

Section 1. All checks or demands for money and notes of the Association shall be signed by such officer or officers or such other person or persons as the Board of Directors may from time to time designate.

Section 2. The fiscal year of the Association shall be fixed by Resolution of the Board of Directors.

Section 3. The Association seal shall have inscribed thereon the name of the Association, the year of its organization and the words "Corporate Seal, Colorado". The seal may be used by causing it or a facsimile therof to be impressed or affixed or in any manner reproduced.

Section 4. The Association will not adopt or publicize any specific or generalized endorsement or non-endorsement of any computer vendor, supplier, product or service. No member is authorized to represent that the Association is recommending or suggesting the use of any particular computer vendor, supplier, product or service. Notwithstanding the above, the Association shall be authorized to disseminate information and reports concerning such vendors, products and services.

Article XIV
AMENDMENTS

Section 1. These By-Laws may be amended or repealed, or new By-Laws may be adopted, at (1) any regular or special meeting of members at which a quorum is present or represented by the vote of the members entitled to vote in the election of any Director, or at (2) a meeting of the Board of Directors by vote of a majority of such Board at which a quorum is present or represented, provided notice of the proposed alteration, amendment, or repeal, be contained in the notice of such Board meeting.

Association of Computer Users
4800 Riverbend Road • Post Office Box 9003 • Boulder Colorado 80301 • 303/443-3600

ACU POSITION PAPER

Testimony Before
The U.S. House of Representatives
Committee on Small Business
Sub-Committee on Antitrust and Trade Restraint
Affecting Small Business

May 7, 1981

by

Hillel Segal, President
The Association of Computer Users, Inc.

An independent non-profit corporation
Formerly The Association of Time-Sharing Users and The Association of Small Computer Users

ACU Position Paper

Thank you Mr. Chairman, Committee Members, Ladies and Gentlemen. I appreciate the opportunity to appear here today.

I am testifying today to express the voice of an impartial association of users of computers and related services—who are the consumers of the computer industry—to call for open entry into the data processing industry. We ask this in order to allow free competition to provide the widest possible range of choice of consumers of the data processing segment of American industry. It is our view—and I am speaking officially, with full knowledge and consent of our elected board of directors—that the end user can best be served by allowing wide-open competition, provided of course that fair and ethical business practices are always used.

Background

Before I go on, allow me to briefly describe the Association of Computer Users and our activities, so that our position can be better understood.

The Association of Computer Users includes users of all kinds of computer and word processing systems. Our membership, over 3,000 individuals, includes people who use computers in industry, government, science, education and in many other areas as well. Represented are nearly all states of the nation and several foreign countries. A significant percentage of our members are small business users. In addition, we have a separate, non-voting membership category for manufacturers and suppliers of computer equipment and services.

As the Association's elected president, I serve as chief executive officer and editor of the ACU's numerous publications. We publish a monthly ***Bulletin*** of industry news, a bimonthly magazine-style journal, called ***Interactive Computing,*** and seven special newsletters for computer users.

Benchmark Reports

ACU is perhaps best known for its ***Benchmark Reports,*** which compare the performance of similarly-priced and configured computers. So far, we have compared nearly three-dozen computer systems in three different price ranges.

The benchmark tests, which can be likened to road tests commonly performed on sports cars and reported on in consumer magazines, are an attempt to find a standard measure for the speed of computers in the performance of various common tasks. Our tests provide a real-world testing ground which allows systems to compete on terms as equal as possible. The performance times, in minutes and seconds, are far more revealing than any other form of comparison.

Portions of the results of these benchmark tests are reported on in regular columns appearing in the

trade press. ***Computerworld*** and ***Interface Age*** are two publications which carry these results.

We at the Association are in daily contact with individuals who use computer equipment through our telephone reference service. We receive numerous inquiries and reports of problems, and we do our best to steer people to the right sources of information. In the process, we discover much about the concerns of day-to-day computer and office equipment users.

The Industry is Healthy

As you can see, our activities place us in a unique position to monitor the needs of consumers, and this is reflected in our position, which I'll now explain.

While there are many difficulties facing the user of computers and services, including the question of vendor selection, software acquisition, service, training, and continuing support from the vendor, we see from our perspective as users, an industry that is currently healthy. American is still in a leadership position in the design, manufacture and programming of computers and in their utilization by business, education and government. The American computer industry is enjoying a prosperity which few can argue with. New firms are still able to get started, while older companies find they must **not** stand still in order to maintain their previous market share. This is entirely as it should be.

However, it is evident from the positions of some suppliers, and many that we've heard from today—that they feel the door should be shut once they are inside. These parties seek to lock-out the competition through regulatory shenanigans. They seek to restrict the trade of others in order to benefit their existing self-interest.

We cannot condone such tactics. Enterprise should **not** be restricted to only a portion of those who would compete. The doors should be opened to all.

Our Position

In short, we feel that the entry of new firms into the marketplace is to be **welcomed** as a normal process within our free society. Our modern time-sharing services industry, for example, has evolved over the years through the entry into the field of many firms which originally had no intention of selling computer time or software. But as large corporations developed substantial in-house computing capability, they began to consider selling their excess resources to others, and lowering the cost to themselves of major programming projects by sharing the end products with those having similar needs. In doing so, they crossed over into the role of time-sharing services supplier, and joined the industry as a vendor instead of a customer. Some airlines and oil companies are perfect examples of

this. While this is certainly not the only way in which many computer service firms have started, it is a common path, and should not be denied to newcomers now.

If the entry by new firms comes at the expense of some established suppliers, this is a fact of life which is certainly important to them but is of less concern to the consumer. And this is the major point I'm making today: **the consumer's interest is best served through the interplay of unrestricted business.** If the new introduction is a better product or service, its success will be **deserved;** if not, it may at least serve to stimulate improvements from other competitors.

Free Choice Good For All

The end result is that the entry of new firms means greater choice for the consumer, not less. But if we lock out companies for one reason or another, the restrictions will stifle the business atmosphere, weaken a fine industry, and leave us more vulnerable to foreign competition.

Regarding some of the other testimony you've heard today, we can understand the position of some suppliers of computer services who may be exposed to new competition from companies with significant financial clout. Our understanding of their argument is they fear that financial institutions, such as banks, have a "captive" customer base and in an effort to secure customers will use their financial resources in an anticompetitivm manner—either by predatory pricing tactics, financial leverage, or other unfair methods of competition.

If this should occur, there are laws already in place and being enforced—the federal and state antitrust laws and the Federal Trade Commission Act. In fact, we understand that the FTC is engaged in several present investigations of alleged unfair methods of competition by existing computer vendors.

On balance, we feel that the existing legal structure provides a remedy for the kind of conduct feared by some present suppliers. **And more important, we think that the competition shouldbe given a chance.** If serious inequities and harm to the industry should result from permitting financial institutions and companies like AT&T from entering the business, Congress has the means at its disposal to review the problem and to determine if legislative relief should be enacted.

Conclusion

In conclusion, I would like to suggest that the interests of millions of consumers take precedence over the self-serving strategy of an industry in-group. Our computer suppliers are a diverse group ranging widely in size, scope, and area of specialty, but there is still plenty of room for new ideas, new applications, and new resources. In a fast-growing and rapidly-evolving industry, let's not stand in the way of change—let's encourage it through fair and open competition.

Thank you.

Association of Computer Users
4800 Riverbend Road • Post Office Box 9003 • Boulder Colorado 80301 • 303/443-3600

ACU POSITION PAPER

#2

Testimony Before
The U.S. House of Representatives
Committee on Energy and Commerce
Sub-Committee on Telecommunications,
Consumer Protection and Finance

February 24, 1982

by

Hillel Segal, President
The Association of Computer Users, Inc.

An independent non-profit corporation
Formerly The Association of Time-Sharing Users and The Association of Small Computer Users

ACU Position Paper

Thank you Mr. Chairman, Committee Members, Ladies and Gentlemen.

Our primary topic today is the adequacy of the revised consent decree agreed upon by the Justice Department and the American Telephone and Telegraph Company. This landmark decision, involving the divestiture of the 22 regional operating companies, is intended to bring about a result which we in the Association of Computer Users—and other consumer-oriented groups—have long advocated. That result is an increase in healthy competition within the communications industry.

Before I go on, allow me to briefly describe the Association of Computer Users, so that our position can be better understood.

The Association of Computer Users includes users of all kinds of computer and word processing systems. Our membership, approximately 3,000 individuals, includes people who use computers in industry, government, science, education and in many other areas as well. Represented are nearly all states of the nation and several foreign countries. A significant percentage of our members are small business users. In addition, we have a separate, non-voting membership category for manufacturers and suppliers of computer equipment and services.

As the Association's elected president, I serve as chief executive officer and editor of the ACU's numerous publications. Our activities place us in a unique position to monitor the needs of consumers.

A New Era Of Competition

In our opinion, the removal of restrictions on AT&T provided for by the new agreement lays the groundwork for a new era of strong competition—not only in the communications field, but in the computer industry as well. It is an event which we welcome whole heartedly. **In our view, the more players in the game the better.** And AT&T, with its tremendous financial and scientific resources, is in a unique position to eventually offer a strong challenge to IBM for leadership in the computer industry. As the computer industry undergoes a period of rapid growth and change, we can think of few better stimuli than the entrance of AT&T. We therefore congratulate the two parties to the agreement for their work toward an excellent compromise that will allow AT&T to enter new markets.

At the same time, however, we recognize the need for close scrutiny of all aspects and ramifications of so major a change. There are still several considerations needing attention and possible legislative action. This subcommittee's action in reviewing the modified consent decree is wholly appropriate, and we applaud its efforts.

Local Access Charges

To a large extent, this agreement may succeed or fail based on the adequacy of one arrangement that is yet to be completely worked out. This is the question of the local access charges which the AT&T Long-Lines Division and other interstate carriers, such as MCI, will be required to pay to regional telephone operating companies. The size of these payments for the local portions of long-

distance telephone calls will have a significant effect on the financial health of both AT&T and the divested regional operating companies. The payments will also directly affect consumers by determining the relative costs of local and long-distance service.

We feel that if the access charges are set too low, the result will be unacceptable increases in the cost of local service. On the other hand, if the rates are set too high, it is possible that the Long-Lines Division will be unable to generate the profits that would enable AT&T to enter new markets and compete effectively in its new role within unregulated areas such as the computer industry.

We, therefore, urge that the issue of access fees be addressed in depth by all parties. **We must not allow the competitive benefits of the revised consent decree to be nullified by an inadequate resolution of this important financial issue.** At the same time, we must ensure that the interests of telephone users throughout the country are fairly considered in any ultimate settlement.

In the long run, we envision tremendous growth in the usage of telephone services by small computers, and this brings us to our second subject of concern. We are now at the dawn of a new age—**the small computer age**—and the potential uses of computers in the home, industry, government and education are just beginning to be realized. Within the next decade, we will see an enourmous impact on our economy, our style of work and living—even our culture as a whole. This will come about because of the ability of small computers to communicate with each other and exchange information over the telephone lines. Electronic messages, access of centralized data banks, banking, shopping, and working from the home—these are just some of the possibilities. But they all depend on the availability of dependable low-cost communications facilities.

The Importance Of Low Telephone Rates

At this early stage in the growth of computer communications, **a drastic hike in telephone fees could have an extremely negative impact on the growth of the entire small computer industry.** In particular, the imposition of per-call charges for local service—so-called message units—would greatly increase the cost of using small computers for these new applications. Faced with drastically higher costs, these new services would have much greater difficulty becoming established. Just as the telephone industry blossomed in its early years through low-cost, flat-rate service, so should the early growth of computer communications be given a positive environment in its formative period. Once the industry is mature, a more flexible rate structure which takes into consideration the volume of usage can be put into place. In the initial stages, however, everyone—industry and public alike—stands to benefit from continued low-rate access for small computers.

In conclusion, I wish to thank members of the subcommittee for their interest in these important topics. AT&T's entrance into new, unregulated markets is a tremendous step forward for both industry and consumers alike. At the same time, the establishment of fair rates for all classes of telephone service is of paramount importance, and we urge that full consideration be given to the points we have addressed.

Interactive Computing

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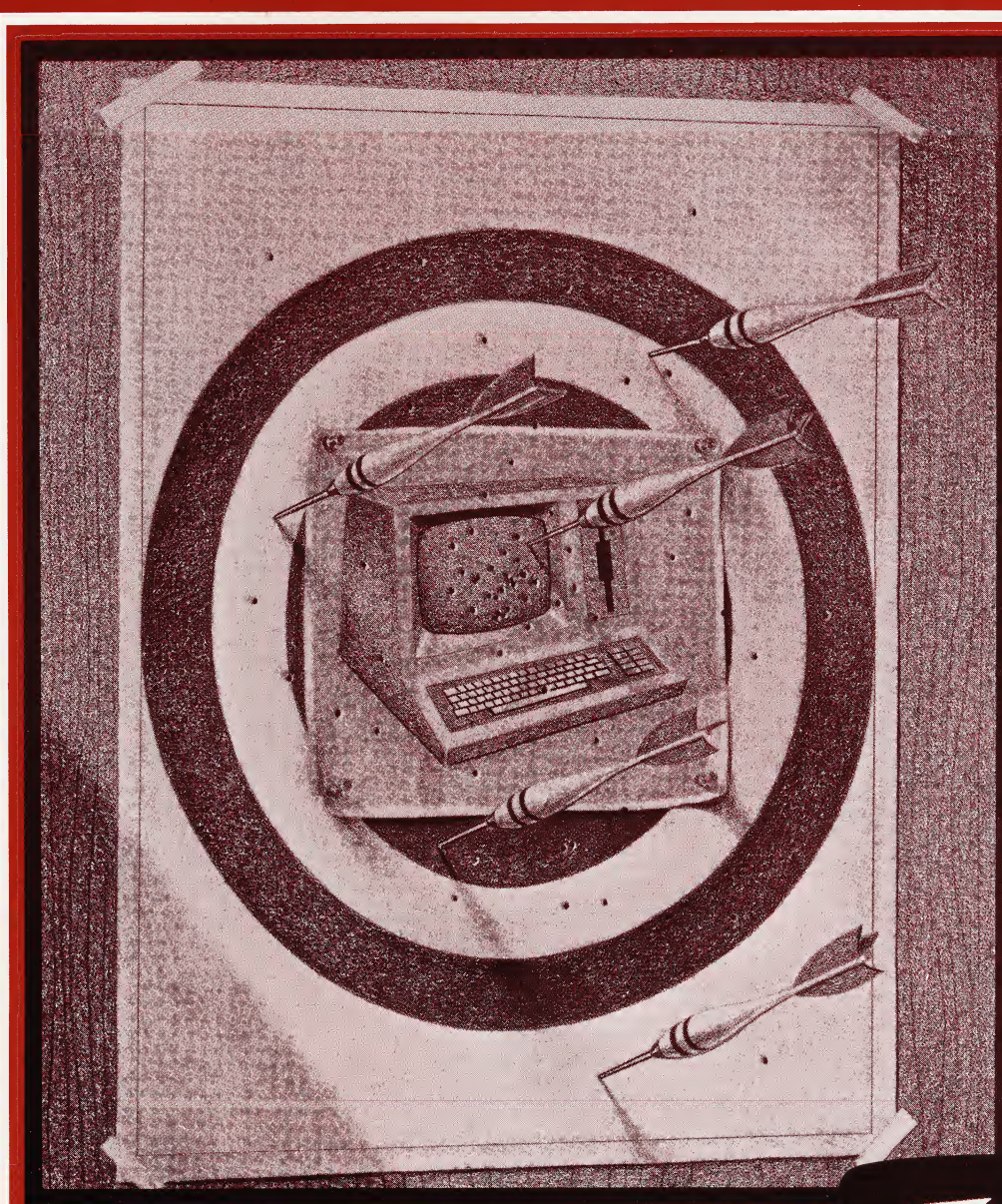

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The Association of Computer Users

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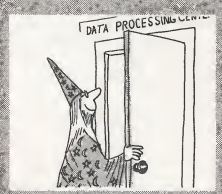

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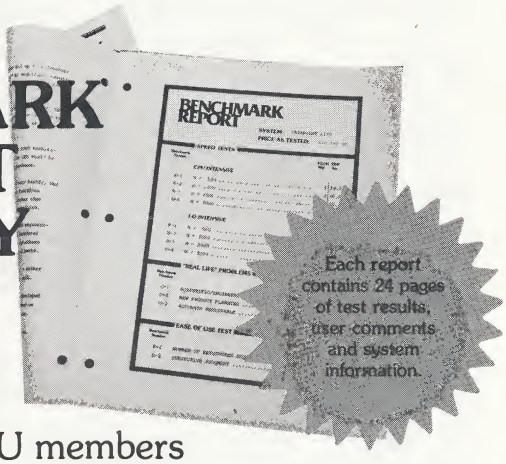

At a new low low price for ACU members

For the first time, ACU is now offering its complete library of 36 BENCHMARK REPORTS at the special low price **of only $175** for members only.

Originally, the entire set sold for $750—each charter subscriber received the individual reports as they were prepared during '80 and '81—and they were the most up-to-date competitive analyses of small systems available in the data processing industry.

While all the information is not as "hot" as it was when it was first released, it is still **current, timely and exceptionally valuable** for those considering alternative small computer systems. Now priced at only $175, it is a real bargain for ACU members.

Each report presents impartial test results in a clear, concise format

Each 24-page system report contains, in non-technical terms: (1) the results of four benchmark programs, (2) an ease-of-use test, (3) a user survey, and (4) a complete system summary from a user point of view. All ACU members are urged to take advantage of this special offer.

24 Single User Systems

Test results on 24 of the most popular small systems under $15,000. Each system is tested with floppy disk storage, keyboard, CRT screen and printer.

- *Texas Instruments 771*
- *North Star Horizon*
- *Vector Graphic System B*
- *Digital Microsystems DSC-2*
- *Radio Shack TRS-80 Model II*
- *Ohio Scientific C3-A & C3-B*
- *Alpha Micro AM-1011*
- *Pertec PCC 2000*
- *Cromemco Sys. Two & Z-2H*
- *Digital's DECstation 78*
- *Apple II Plus*
- *Data General CS-10*
- *IBM 5120*
- *SD Systems SD-200*
- *Datapoint 1550*
- *NEC 205*
- *Billings BC12BF2M*
- *Dynabyte 5300*
- *Wang 2200 SVP*
- *Commodore CBM-8032*
- *Smoke Signal Chieftain*
- *Zenith Z-90*
- *Vector Graphic 3005*
- *Altos ACS-8000-15 & 6*

12 Multi-User Systems

Test results of the 12 most popular multi-user systems. These benchmark tests not only demonstrate single job stream performance, but also the effect on multi-user response time when up to eight terminals are run simultaneously.

- *DEC Datasystem 355*
- *IBM Series/1*
- *Hewlett Packard HP250*
- *Wang 2200 MVP*
- *Texas Instruments DS990/4*
- *Alpha Micro AM-100T*
- *Data General CS-50*
- *Microdata 4000*
- *Burroughs B-91*
- *Ultimate A1*
- *Datapoint ARC 6600*
- *Altos 8000-10*

TO ORDER YOUR LIBRARY: See separate order form enclosed with this issue. (Or membership application attached for new members.)

ACU Bulletin

A Monthly Summary of Industry News and Association Activities

ACU Update

ACU Seminars Being Planned—In looking at ways to increase our services to members and help new users, we're thinking about holding a series of ACU seminars in the coming year. We might start out by sponsoring a one-day seminar in different locations around the country—perhaps in 10 or 12 cities during the year. In this way, although some travel may be required, it would minimize the need for most members to travel great distances to attend.

One idea is to focus on the topic "How To Select & Manage A Small Computer System" during a day-long seminar session, and then finish with a dinner and presentation on another topic for all ACU members in the area. Since we're still in the planning stage, we'd like to solicit your ideas on seminar topics and subjects for discussion. Of course, we'll also need your help when the seminars become a reality. If you are interested in speaking or participating on a panel, or if you can assist with organization on the local level—such as coordinating hotel reservations, newspaper publicity, local advertising, or in any other way—we need to hear from you.

A program of regular seminars and meetings would be a great way to bring our association membership together to trade ideas and meet fellow computer users. Please use the enclosed questionnaire to let us know what you think, and if you'd like to be part of the program.

Interactive Computing—We're monthly now, beginning with this, the January issue. We think you'll find a broader cross-section of news and comments here than in our previous issues, with topics applying to all seven sections now discussed in these pages. We'd like to know if **Interactive Computing** suits your needs as well as it could. The questionnaires from the last issue are just beginning to come in, and we appreciate your response.

ACU's New Benchmark Library—As you can see from our ad to the left, ACU is now offering its entire library of 36 Benchmark Reports to members at a vastly reduced price.

As you may remember, members were polled several months ago for their opinion on including the Benchmark Reports with membership at a reduced cost, rather than separately at a higher cost as in the past. It was argued that if all members received the reports, the price could be drastically reduced. In analyzing the results of the survey, we found that a majority favored including the reports with membership, but a significant minority did not feel it was proper to force them to purchase the reports.

As a result, our Board of Directors decided to compromise—offering members the **option** of receiving the reports at the lower price. The full set, with 24-page evaluations on each of 36 different systems, is now available for members only—an exceptional value for such a low price.

Private Sale For ACU Members—In addition to the Benchmark Library, a limited quantity of ACU's 1981 Editions of the **Remote Computing Directory** and **Computer Terminal Directory** are now being offered at big savings for members. See the enclosed flier for details. hs

Industry Update

Massive Reorganization at IBM

In a move designed to cut administrative overhead and simplify life for its customers, **IBM** has begun a sweeping reorganization of all manufacturing and marketing operations in the U.S. Just formed are three new groups, one for marketing and field service for all of IBM's products and the other two for manufacturing and development tasks of large and small information systems. The marketing shuffle is expected to result in two divisions: one to market the full range of products to Fortune 1000 firms, and another to do the same for smaller customers. Customers will applaud an end to the confusing situation that previously resulted when two or three salesmen from different divisions at IBM offered separate solutions to the same problem.

In detail, here's IBM's New Corporate Structure:
Information Systems Group—All seven present marketing and service divisions: data processing, federal systems, general systems, office products, information records, customer service and field engineering. Marketing forces to be divided next year into groups for large and small customers.
Information Systems and Technology Group—Manufacturing and development of large information processing systems, semiconductor devices, data systems, general products and general technology.
Information Systems and Communications Group—Manufacturing and development of smaller information processing systems, system products and communications products.

Trade Press Biased Against IBM?

When *Computerworld* magazine polled data processing managers recently, it found many believe coverage in trade publications slanted against **IBM**. One respondent said the press was eager to find fault with IBM, yet didn't cover the firm's products thoroughly enough. In response, we at ACU think there should be no sacred cows; if they "flub up," let 'em have it! We try not to be biased **against** any vendor, just **for** end users.

Fear of Automation May Hinder Use of Office Technology

Will office workers adjust to the new equipment that's becoming available? It's not a trivial question, as the drive to improve productivity in the office runs into the same human factors that have accompanied automation in other areas of the economy. Two experts recently warned that skepticism and outright hostility can result if new systems are introduced quickly or carelessly.
J. Thomas Horrigan, an officer at **Maryland National Bank**, says workers who lack familiarity with DP equipment may fear the unknown and cling to "doing it the old way." Managers may reject the keyboard, seeing it as a clerical function, while secretaries may worry about being reclassified as a WP operator if they use a system too much.

Citing much the same set of problems, consultant Ursula Conner of **Ubi Enterprises** (Greenwich, Conn.) suggested a gradual training program over a period of several months, with hands-on experience at an early stage and day-to-day technical assistance throughout. But she noted that just training isn't enough to ensure that productivity gains made initially will be long-lasting. Changes in job roles may be necessary, she says, and managers should "look at new ways to restructure jobs so that every person has both machine and human interaction during the workday."

ACU's ***Bulletin*** is researched and edited especially for computer users—in order to provide a capsule summary of the key items discussed each month in dozens of technical and trade publications covering the computer industry.

New Product News

Hewlett-Packard
1820 Embarcadero
Palo Alto, CA 94303
(415) 857-1501

Hewlett-Packard recently revealed its new strategy for the '80s with its introduction of new word processing software and hardware, and two new models in the HP 3000 family. The firm's word processing system is the **HP WORD/3000**, which uses special word processing terminals, priced at $4,950 each, connected to the central computer. The software costs $5,000, with a monthly maintenance fee of $95. HP says the package is designed for use by secretaries in typing letters, memos and reports. The firm also says that it now offers a wide range of computing services for office functions—calling the concept the "interactive office."

Digital Equipment Corporation
Maynard, MA 01754
(617) 467-5111

In introducing its new personal computer, **Digital Equipment Corporation** has taken a rather interesting approach. By adding a processor/memory board internally and floppy disk drive externally, the firm transforms its existing **VT100** display terminals into personal computers with the **CP/M** operating system. (Software is available from outside sources such as Lifeboat Associates and Digital Research.) The enhanced product is called the **VT18X**, and costs $2,400 above the VT100's basic price tag.

In addition, DEC announced a new electronic mail system for its computers and word processors, giving the name **"Office Plus"** to its total approach to putting computers in the office. The electronic mail system, called **DECmail**, uses the firm's **VAX-11** family of computers and any DEC terminal. DEC now offers a variety of office products, including word processing packages for its computers, graphics, typesetting, and four communications options.

Personal Software
1330 Bordeaux Dr.
Sunnyvale, CA 94086
(408) 745-7841

Personal Software has wasted no time in following up the successful **VisiCalc** program with other products for the Apple computer. The company's latest effort is **VisiFile**, a set of utilities for file management—handling mailing lists, inventories, and other groups of records. It features easy-to-use menus, search and sort functions, and automatic arithmetic such as column addition. VisiFile joins a set of programs that includes **VisiPlot** (graphics) and **VisiTrend/VisiPlot** (statistical analysis with graphics), and the various products can be used together on the same data. With the **VisiTerm** package, information can be transmitted over the phone to another computer. VisiFile costs $250 and requires an Apple system with disk drive and 48K of memory.

DEC's new personal computer upgrades their popular VT100 terminal.

ACU's New and Renewing Members

Applications Received
in **October 1981**

"Thank-you!" to all renewing members for your continuing support, and welcome aboard to new members just signing up. The list below shows renewals and new members along with the company they're affiliated with, if one was indicated. The asterisks after the names of renewing members represent the number of years they have been a member.

Herbert I. Abelson *
Response Analysis
P.S. Abrams *
Petroleum Data Corporation
Charles Agin ***
General Reinsurance Corp.
J. Alf *
Clow Corp. Water Mgt. Div.
Stanley Allison ***
Horace Mann Insurance Co.
Bob Alsaker **
Kroy Inc.
Fred Alyea **
St. Anthony's Hospital
David L. Anderson ***
GM Enterprises, Inc.
Luis E. Aparicio
Systronics Business Machines
J. W. Banko ****
Harris Corporation
Lloyd Barnard, Jr. *
Newcomb & Boyd
Char Beckler *
Centurion Family Restaurant
Thomas J. Becvar **
Signode Corp.
Cynthia M. Bellomy **
Alaska Interstate Co.
Douglas C. Belton *
Filter Queen, Inc.
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Philip Vogel & Co.
E. J. Berman ***
Berman, Mills & Co.
Richard G. Beyer **
National Floor Products, Inc.
Anil K. Bhala ***
Schreiber Foods, Inc.
Irving B. Bied *******
Shadur La Vine & Assoc.
Bion B. Bierer ****
Bristol - Myers Co.
Eleanor L. Bissinger ***
Lebenthal & Company
William J. Blatt ***
Humana, Inc.
Thomas H. Bly **
County of Butler
Hester A. Bouwkamp ***
Gallmeyer & Livingston Co.
Richard M. Bramblett ***
Medical College of Georgia
James M. Brandl **
Life Care Services Corp.
Robert J. Brasier ***
Tipp Machine & Tool, Inc.
Stanley Braunstein *
MBS/Multimore
Seymour Brooks *
Citishare-Citibank N.A.
Donald B. Brout ****
Standard Brands, Inc.
Karla H. Brown **
Monsanto Textiles Co.
Jeff Buchanan **
Battelle-Northwest
Regina Buechley
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Richard Bueschel *******
TSC
Dwight M. Buffum ******
Union Pacific Railroad Co.
Royden O. Butterfield ***
Northern Regional Res. Center
Alfred R. Cackowski *******
Chicopee
James Caffey ***
Rady & Associates, Inc.
Stephanie M. Campbell *
Real Estate Analysts of Newport
Raul Zuno Cardenas **
Ladrillera Monterrey, S.A.
Linda Carney
Honeywell
E. H. Casper *****
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R. Charnock *
N.P.R.I.
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Stuart Corsover ***
James Cruce **
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Missionary Church, Inc.
Dale Curry **
SKF Industries, Inc.
R. F. Danaher ***
Gast Mfg. Corp.
Doug Dashner **
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Valley Bancorporation
Paul R. De Maagd *
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Construction Managers
Alan A. Dettmering *
Palo Alto Medical Foundation
Paul E. Dillon ***
Boulevard Publications, Inc.
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Gary N. Powell **
Peat, Marwick, Mitchell & Co.
Anthony J. Praza **
Speed Queen Company
N. M. Quinn **
Computer Processing Institute
James Ragazzo
Honeywell
John A. Richard *
Social Security Administration
Wendell Richardson ****
Computer Management Center
Jack B. Rochester
Computerworld
Thomas G. Rolfe ****
CCH Computax, Inc.
Lynn B. Rose *
Sydel International Inc.
William A. Rousseau *******
Alpine Engineered Products
Debra A. Rowe ***
Sentry Life Insurance
G. M. Rueger **
Pacific Gas & Electric Co.
Larry Schmieder **
Computer Sharing Services
Edward J. Schmit **
CFS Continental, Inc.
David A. Schneberger ***
Reynolds & Reynolds
Arthur H. Schneyman *******
Mobil Oil Corporation
Steven A. Scrignoli *
Scrignoli, Fitzsimmons & Assoc.
Hillel Segal *******
Association of Computer Users
James A. Shafer ***
Arizona Geriatric Enterprise
Jon Shirley *
Radio Shack, Div. of Tandy
Scott Siegel *
Gil Schwartz Distributors
C. A. Siegfried, Jr. ***
American Rental Assoc.
John A. Siewert ***
World Vision International
Calvin Simmons **
Simmons Management Services
Waldo O. Smeby ***
Metalcraft, Inc.
Don R. Smith
Price Waterhouse & Co.
Gary Smith **
New Mexico Tech. Computer Crt.
Steve Smith ***
Peat, Marwick, Mitchell & Co.
Joseph B. Smock ***
Warner-Lambert Co.
Stephen Snyder ***
PFA Members Svc. Corp.
John A. Staff ***
Cortland Container Corp.
Don Stanfield *
Radio Shack
Herbert Starr ***
Stanley Vemco
Martha S. Staszak ***
Northwestern Mutual Life Ins.
Karin Steinbrenner ****
Nat'l Opinion Research Ctr.
Leon P. Stevens *******
Standard Oil Company
C. A. Stokes **
Automated Business Systems
Gene Straub ***
Cordle & Company
Bambang Sunjoto *
T. L. Terrell, Jr. **
Tyson Foods, Inc.
Richard A. Thibodeau *****
Limra
Jerry J. Throckmorton ***
Peter G. Tuckerman *
Com-Dev, Inc.
John M. Tym
Continental Risk Services
Clarence E. Tyner, Jr. **
School Board of Hillsborough County
Peter J. Valter **
Hospital Path. Central Lab.
E. Vambutas ***
Digital Interface Systems Corp.
Edward Villani *
GM Corporation
Joseph N. Vitale **
Computer Application Consul.
Darrel Wafer **
Hydrill-AOS Division
D. L. Wagner **
Moore & Company
Holon Wong Shuk Wai
Robin Information Systems
Robert M. Walter **
Eversman Mfg. Co.
Bob Warrens *****
J. Walter Thompson
A. H. Warshawsky *******
Marmon Group
Bennett C. Watson
Responsive Computer Systems
Thomas M. Watts *
Syracuse University
Erick F. Weiland **
Barringer Resources
Charles W. Wieland **
Electrocube, Inc.
Jay N. Willard **
Leader Data Processing
Jerry D. Williams **
Tocon Construction Corp.
R. L. Wolfe **
Old Dominion University
Lonnie C. Yee *
Oil & Gas Data Processing, Inc.
K. P. Zech ****
Ford, Navarre & Zech, Inc.
V. Von Zwehl **
Varn Prod. Co., Inc.

Why Does Everyone Hate DP?

by Jesse Berst

As computers become cheaper and easier to use, non-technical personnel will be responsible for a larger share of computer-related tasks. That's tomorrow. Today, however, DPers still shoulder most of the computing burden, and the problems that go with it. One of the most common difficulties is poor relations with end users. It's one of the hardest to overcome, too, because unlike most DP problems, it doesn't respond to the technical solutions DP professionals are comfortable with. That doesn't mean the situation can't be improved, however, as we find out in this report about the real-life techniques being put to use at several computer installations.

Scars And Gripes Forever

There's no way to know for sure, but the problem of end user relations has probably been around as long as the computer itself. When the switch was first thrown in February, 1946, ENIAC was more than likely overdue and overbudget. Somewhere in that huge room with its blinking lights and 19,000 tubes there undoubtedly lurked a miffed end user, grumbling to himself that ENIAC wasn't "quite what I had in mind."

Ever since those days, the battle lines have been drawn between the people who provide computer power and those who use it. Computer technology has always scared off end users, who have instead imported specialists to care for their computers, technicians who are usually set apart from their fellow workers. They labor in a separate area; they speak a specialized language; they form a mysterious technological enclave. To many users, the DP department seems to be a haughty—if not downright hostile—high priesthood.

End user Jim Phelan, principal engineer at the Nuclear Service Division of Westinghouse Electric Corporation, gave this typical response when asked if he has problems dealing with DPers: "All the time. There's a lack of understanding of end users' needs and of our urgency. And there's a lack of discipline. DPers fail to set and keep schedules, to organize, to order materials on time, to pass information along."

Phelan cites as an example a case where the equipment showed up after the floor plan and wiring were already done. There was no place to put it nor any electricity available, because the DP department had "forgotten" to tell users that it was coming.

And don't think that disgruntled end users are found only at large corporations. Small users tell the same kind of horror stories. Bill Griffin, vice-president of Griffin Hardware in Santa Ana, California, told me that dealing with DP types is the most frustrating part of computerizing his store. "They live in another world," he complains. "You tell them you want one kind of program and they come back with another. Everything has to be redone over and over again."

The users I spoke with gave me enough grievances to fill up the rest of this article, but perhaps it was Don Smith of Diamond Shamrock's International Technology Unit who gave the best summary of why users don't always get along with DPers. Smith, who is Vice-President, Administration, said that the DP department has a "credibility problem." They don't deliver what they say they will; they don't deliver it on time; and they don't deliver it within budget.

"Every time DP lets a piece slip, users get more disenchanted," he said. "If you give your wife $100 and she breaks her promise and spends $150, you've got a credibility problem. If she does it every week for 10 years, you've got a ***big*** credibility problem."

DP Suffers

That credibility problem costs the DP department in a number of obvious ways: loss of respect,

lowered budgets, missed promotions, and acrimonious on-the-job relationships with users.

What's more, says Howard Tureff, Chairman of ACU's Large Computer Section, when users lose faith in their DP department they develop systems themselves or go outside to buy them. "They may get it done quicker or even cheaper, but it creates ongoing compatibility and maintenance problems that end up back in the DP department. In the long run, it doesn't help anyone." Tureff is manager of Engineering Computer Resources for Gould, Inc.

More and more DP people have realized that they pay a heavy price when end user relations are poor. In a spirit of enlightened self-interest, many have developed ways to improve the situation. As described below, most of the solutions are based on common sense theories that have been around for a long time. Our purpose, however, is not to rehash the old bromides, but to show how a few companies have translated those theories into actual practice.

continued . . .

"Hey, I thought we were all supposed to be on the same team!"

Talk To Me!

Of all the things end users say they want from the DP department, better communications probably tops the list. *Computerworld* columnist Jack Stone thinks that improving communications is crucial to DP managers' success, and even to their survival. "Simply stated," he wrote recently, "DP management must seek out and put into sensitive interface slots those people who can deal easily with particular [user] populations. For those managers concerned about their longevity, I make this suggestion: get communicators in or prepare to get out."

"The end user must have a critical role in the decision to invest in the application . . ."

More and more DP managers are taking this advice. One common strategy employs a form of "shuttle diplomacy." Many organizations have created special job slots for individuals whose major responsibility is to act as a bridge between users and DPers. At Zayre Corporation, a $1.5-billion East Coast retailing firm that employs 300 DP personnel, the technique is known as the "Business System Interface." Involved are senior staff members with both DP and user know-how. While representing user departments, they report to the DP department. Zayre's top management considers them indispensable for such tasks as systems definitions, cost/benefit analyses, acceptance testing and implementation.

The Upjohn Company has had a similar system for several years, according to corporate time-sharing administrator Larry Leslie, who serves as the chairman of ACU's Time-Sharing Section. While the Zayre group is staffed about fifty-fifty with users and with DPers, the Upjohn interface organization is made up exclusively of DPers who have demonstrated competence in dealing with users. They report to the Director of Information Systems, but their job is to represent the user community in the planning and development of major systems.

In a similar vein, Jim Phelan reports that Westinghouse has had considerable success with a steering committee composed of department level managers and other interested parties from both the DP and the user communities. He calls the group "an extreme benefit—it really improved our ability to get things going. Now that we've got a dialogue started, a lot of the barriers are disappearing. We are beginning to understand the DP department better and they don't seem so unreasonable."

Read All About It!

Although groups like the ones described above may foster a dialogue between key individuals, they cannot serve the needs of the entire user community. To spread the word a bit further, some DP departments have turned to newsletters and questionnaires.

At Upjohn, for example, a questionnaire goes to major users asking them to evaluate all facets of the computer service they are receiving: how accurately the DP department estimates costs; if DP is delivering systems in time; if maintenance is adequate; and so on for 40 questions. The results are summarized and distributed to all DP managers. Larry Leslie says he appreciates the chance to find out what clients are really saying about his services because "inevitably, you see some areas where you are weak and can improve."

Howard Tureff reports that Gould has a similar questionnaire. He warns, however, that knowing about user complaints and doing something about them are two different things. Usually the DP department doesn't have the manpower or the

budget to please all of the people all of the time. In cases like this, Tureff says he uses the questionnaire as a marketing tool to sell top management on increasing the budget. "When I talk to management, I can go in with a stack of the reports showing what users really want and are complaining about. It really helps me document my case."

Still, Tureff doesn't always get everything he wants from top management. When I talked to him, for example, users were complaining about his overloaded computer, but he hadn't gotten funding approval for improvements. In such cases, he does his best to keep users aware of the roadblocks faced by the DP department so that DPers aren't cast as the villains. To help get the word out, he has instituted a bimonthly newsletter. In addition to keeping the client community informed of problems and their causes, the newsletter also keeps them up-to-date on changes, gives instructional information, and passes along helpful hints contributed by the users themselves.

Tureff warns, however, that although better communication will let users know the DP department is aware of the problems, it won't solve any of them. In fact, more communication may raise user expectations and make matters worse unless DP can ultimately make some improvements.

More User Involvement Can Help

At Gould, says Tureff, real improvement came when users began to do a lot of the development work themselves. This strategy has been recommended over and over again in the industry press, and it should certainly join better communications as one of the standard prescriptions for improving end user relations.

Dave Mollen, a *Datamation* contributor and an instructor at IBM's Systems Science Institute, has said: "From long experience with both DP professionals and end users, I am absolutely convinced the most important single factor affecting applications development is how well the participants fulfill their roles."

What is the right role for users? "The end user must have a critical role in the decision to invest in the application, in its design and in its implementation," Mollen said. "The DP manager should never be the person to decide the next application to be implemented." True, some DPers still don't like users "tagging along," but more and more computer professionals are insisting on user involvement to ensure that the project will meet with acceptance and reflect well on the DP department.

Many experts now agree that the DP department should play the same role as an architect. First, it should act as a consultant, helping the user design the system he wants. Next, it should oversee the

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"There's the new VP for DP."

Why DP Projects Miscarry . . .

Murphy's Laws of

As outlined in this month's feature article, end users and DP personnel are often at each others' throats. Each group blames the other for DP failures. Perhaps the real problem is that both sides have been ignoring the truism immortalized by Murphy: "If anything can go wrong, it will." After all, nowhere in the realm of business does Murphy's Law prevail with more horrendous effects than in the design and installation of new computer-based systems.

In the development of computerized business systems, a great many things notoriously can, and too often do, go awry. Only those who will use the system are in a position to say what they want it to do. Only the DP staff can say what the system can be expected to do. Between them they are capable of producing the worst of all possible systems.

To senior management, the trials and tribulations of the systems development project may often seem incomprehensible. Insight into the problems may, however, be gained through an understanding of Murphy's Laws of Computerdom, which distill—in facetious but pragmatic fashion—the painful experiences of many individuals who have undertaken the thankless task of managing such a project.

LAW 1. No major computer application is ever installed on time, within budget, with the same staff that started it, nor does it do exactly what it is supposed to. This law has two corollaries: First, the benefits will be smaller than initially estimated, if estimates were made at all. Second, the applications finally implemented will be implemented late and won't meet all specifications.

LAW 2. The effort required to correct course increases geometrically with time. Corollaries: (1) The longer you wait to define your objectives, the harder it will be. (2) After installation it will be too late; define your objectives now. Communicating the system's scope early and clearly is essential for establishing understanding between the technician and the ultimate user.

LAW 3. The system's purposes as understood by the proposer will be seen differently by everyone else. Corollaries: (1) If you explain everything so clearly that nobody could possible misunderstand, somebody is sure to. (2) If you do something that is bound to meet with everyone's approval, somebody will hate it.

LAW 4. Only measurable benefits are real. Intangible benefits are not measurable; hence, intangible benefits are not real. Top management needs to know how long the project will take, how much it will cost and what resources will be required to carry it out. Weighing the answers to these questions against the specific benefits expected from the system can help determine whether the project is, in fact, justified in whole or in part. Here is another demonstration of the familiar "80/20 rule": typically, the bulk of a project's benefits are derived from a fraction of the total effort.

LAW 5. The greater the project's technical complexity, the less need there is for a technician to manage it. Corollary: Get the best non-technical manager you can; he'll find the needed technicians. The reverse is almost never true.

Mr. Crandell was formerly with McKinsey & Co., the international management consulting firm, where he developed a special interest in the management of computer-related activities. He is currently a General Partner of Brentwood Associates, a Los Angeles venture capital firm.

Computerdom

by George M. Crandell, Jr.

LAW 6. **Every DP project takes longer and costs more.** Corollaries: (1) A carelessly planned project will take three times longer to complete than expected. (2) A carefully planned project will take only twice as long. (3) Time is money.

LAW 7. **If anything can go wrong, it will.** It is while the actual work of design and implementation is under way that Murphy's most famous Law takes over. Corollaries: (1) If nothing can possibly go wrong, it will anyway. (2) Even problems that are anticipated will have totally unforseen consequences.

LAW 8. **When things are going well, something is sure to go wrong.** Corollaries: (1) When things just can't get any worse, they will anyway. (2) When everything seems to be going better, something has been overlooked.

LAW 9. **Projects progress quickly until they are 90 percent complete, then remain there forever.** Managers can significantly influence the project's chances of success by monitoring progress. Few project teams relish progress reviews, because they can cruelly expose schedule slippages and shortcomings in performance. When progress reviews are held, therefore, estimated percentages of work completed should be interpreted very carefully; large estimating errors may have crept in.

LAW 10. **If project content is allowed to change freely, the rate of change will exceed the rate of progress.** Along with monitoring progress, a key managerial task in the "during" phase is to ensure that the project's scope doesn't get out of hand. Failure to control expanding project scope is one of the most common pitfalls in systems development. This pitfall, however, can be successfully avoided by specifying in advance a workable change-control procedure, and postponing all non-essential changes until the basic application is fully operational.

LAW 11. **If the system fails, the user will lose faith in it.** Corollaries: (1) If the user does not believe in the system, he will develop a parallel system. (2) Neither system will work very well. The final managerial task in the "during" phase is to ensure that when the system is completed its benefits are actually realized. The best method of doing this is planned parallel testing of the system in the real environment. If the system is installed and turned over to the user before the major bugs are eliminated, the chances that it will ever be profitably used will be greatly diminished.

LAW 12. **If users aren't complaining about the system, they probably aren't making enough use of it.**

LAW 13. **Benefits achieved are a function of what is inspected (post-audit check), not what's expected.** An objective post-implementation audit, designed and scheduled in advance, can serve as a strong incentive to deliver a sound product on schedule. In planning the audit, everyone involved should agree in advance what is to be measured, how, when and by whom.

Perhaps no systems development effort will ever entirely escape Murphy's Laws of Computerdom. But if, in planning each stage of the process, they are kept constantly in mind, the chances of success will be greatly increased.

construction of the system. Finally, when things go wrong, it takes care of repairs.

"As users get smarter, a lot of the friction and a lot of the problems go away."

Mollen cites an East Coast insurance company that was among the earliest to adopt the team approach to applications development. When it sought to pioneer a new distributed claims processing application, it tapped a claims manager as the project leader, not a DPer. The resulting working relationship between users and DPers enabled this first-time application to be installed on time—with kudos from users and customers alike.

When TRW, Inc., of Cleveland first introduced computers, "they got the equipment and looked for problems to solve afterwards," according to their retired MIS manager, Clay Lange. That approach led to user resistance. When it came time to bring word processors on board, the company took the participatory approach instead. Before the new machines were rolled in, TRW devoted three months to interviews soliciting the opinions of 350 employees. Then the company installed the machines first in those departments that welcomed them the most. The approach resulted in more productivity and less resistance.

Likewise, Japanese companies have demonstrated an uncanny ability to implement systems successfully, due in part to a tremendous amount of user participation. Perhaps the participation approach boils down to this adage: Don't try to force-feed users with systems and applications you feel "will be good for them." Insist that they get involved from the start. Early user involvement means less time spent redesigning and recoding systems when they weren't what the client wanted.

How do you convince busy users to participate? Consultant and former manager David K. Lindo suggests beginning with this theme: "Information that leads to action." Then build a detailed plan that incorporates these steps: a steering committee, careful introduction of change, thorough education of users, constant publicity, and direct user involvement.

Be careful though—user participation can backfire. "I'm skeptical of those approaches that call for a long-drawn-out process of participation," ACU member Arnold M. Kneitel has been quoted as saying. "There are times when you have to be dictatorial. With the hundreds of users, you can't keep everyone happy. And anyway, it's not necessary. What you have to do is keep everyone productive." Kneitel is a commercial information manager for DuPont.

Raising Computer IQ

Jim Phelan points out that it's not necessary to coerce users into getting involved if they understand in advance the benefits they can get by working together with DP. That brings us to another method of improving relations: user education. As Phelan puts it: "As users get smarter, a lot of the friction and a lot of the problems go away." He actively strives to improve his DP know-how, learning how to do the documentation, how to configure and set up equipment, etc. "I learn to do as much of the work as I can," he explains, "so I can keep the DP experts working on the hard stuff."

Even if they are not blessed with clients like Phelan who educate themselves, DPers can still raise the computer IQ of the user community. One good example is provided by Gould, Inc., where Howard Tureff has instituted training classes for users in his his area. He currently has at least one class going on at all times, and the classes have proved so successful that he is expanding the program.

One class is designed for beginners. It offers general information: what the computer system offers and how to use it. For users with some DP experience, and for those who have take the first class, a second course delves into the command structure and the available utilities. In the past, Tureff's section has offered classes in PASCAL, and other programming classes are in the works.

Tureff admits that many of his users are engineers, who are more knowledgeable and motivated than most users. Nevertheless, he believes additional user education would help in other environments. For a typical MIS department, he believes the classes should concentrate on: 1) a summary of the systems development process; 2) the economics of computer use; and 3) how to get the MIS department to accomplish what users want.

The emphasis of such training should be on teaching users how to solve their own development problems, so the DP department doesn't have to do it for them. Users often resist the idea of detailed definitions. After all, such definitions are a lot of hard work—*theirs*. But when users understand that specifications are necessary to get what they want, they usually cooperate. Training classes can help sell the idea of user involvement in the development process. Once the benefits have been explained to users, they no longer see it as bureaucratic red tape.

Take A Look At DPer Education

Although experienced DPers tell me it's wise to foster better user training, don't forget the education of DPers. Every time DPers upgrade their skills at programming or project management it improves their ability to deliver timely, cost-effective products to users. In the final analysis, there is no better way to improve end user relations. And don't think that technical classes are the only good option. If DPers want to improve end user relations—and indeed, their own careers—they'd be wise to invest some time learning non-technical skills.

In a recent issue of *Computerworld*, consultant William Bearley and accountant Michael Wood stressed the need for additional non-technical education for DPers: "When observing DP technicians attempting [to interface with users], it becomes apparent that they are untrained. The typical analyst's initial education and experience is in programming. The title 'analyst' is merely a prerequisite to obtaining a higher salary and has little or no bearing on that person's ability to work with people effectively."

"Today, most good analysts evolve by accident rather than by planning."

"Today," they continued, "most good analysts evolve by accident rather than by planning. We believe that part of the analyst's grooming should include training in effective communications skills, organizational theory, management theory and human behavior."

Run A Mile In Their Shoes

Bearley and Wood's comment about human behavior leads us into the final topic of our discussion. Involvement in planning helps end users to better understand DPers, and by the same token, DPers can become more popular and make their own jobs easier if they understand what motivates end users. Over and over again, users complained to me that DPers don't understand their needs, particularly their sense of urgency. Users have to run hard just to keep up, and they resent being slowed by DPers who seem to have no comprehension of the pressing demands of everyday business life.

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Putting Computers To Work: How Three ACU Members Use Small Computers

by Jesse Berst

One benefit of ACU membership is the opportunity to make contact with other computer users, since people who have put computerization into practice usually have some good ideas to pass along. You'll probably pick up a good idea or two from this issue, which features brief case histories of three ACU members.

ACU's Diversity

This issue's three case histories reflect the diversity of ACU's membership. We spoke to a professional, a small businessperson, and a user from a corporate environment. The broad range of their computer experiences shows that, no matter what your situation, there is probably an ACU member out there who's been through it all before. Here is a summary of what three people went through when they decided to put a computer to work.

The Professional

Neal Koss, M.D., is a Torrance, California, plastic surgeon in solo practice. He employs one full-time secretary-receptionist, a part-time Registered Nurse and a part-time bookkeeper. Although he's been involved with computers for over 18 years, it wasn't until about two years ago that he decided to buy a small computer for his practice.

His choice was an Industrial Micro Systems product—a 64K Z-80 microcomputer with an 8-inch floppy drive, Beehive CRT, CP/M operating system and a TI 810 printer. He later purchased a second micro (this one a similar Z-80 system from No Name Computers) for his home. Most people won't need two computers, but Dr. Koss wanted a machine at home because one of his hobbies is developing software. In the past, he has spent time developing statistical software and operating systems for medical data analysis in research environments.

Users with data processing experience like Dr. Koss have certain advantages when it comes to putting a computer to work. For instance, when Koss decided to automate his general ledger and accounts payable, he started with Osborne packaged software, then modified the programs extensively. His programs now feature faster screen manipulations and improved search techniques. He's also added things that he was unable to find in any package, such as asset file maintenance for tracking assets, applying depreciation, and so on.

Although the experiences of Dr. Koss illustrate the advantages of programming know-how, they also demonstrate some of the drawbacks to the do-it-yourself approach. Although Koss has plenty of expertise, he doesn't always have enough time to use it. Meanwhile, his computer is not being used to its fullest extent. One example is accounts receivable and medical billing; that application must wait while he completes a program he is developing together with other medical people.

Meanwhile, the computer doesn't do much besides general ledger accounting, and that means that Koss doesn't get full value out of it. He hopes to change that soon by purchasing a second terminal and a letter-quality printer that will let his secretary use the computer for word processing.

With his considerable computer know-how, it's not surprising that Dr. Koss has given talks to medical groups about computerization, and was formerly president of the Society for Computer Medicine. Although he calls himself a computer "fanatic" and says he'd like to see more people get involved with computers, he warns that buying a computer can be hazardous to your pocketbook.

"It's very easy to get tripped up by a lot of bells and whistles into getting something you don't need," he cautions. "I've seen too many of my colleagues buying $30-40,000 systems when that was more than they needed. Such systems are not only too expensive, they are too sophisticated and too

complex. The buyers found they couldn't understand them and no one in their office could either."

How can users avoid such problems? "The number one thing," Koss counsels, "is to find someone who already knows about computers and learn from him. Don't just go out and listen to dealers—they are not on your side."

The Small Businessperson

Jaffra Masad is secretary/treasurer of Mechanical Maintenance and Service Corporation, a small firm that services heating and air conditioning units for commercial establishments in the San Francisco area. After using an outside payroll service for some time, she decided to purchase an in-house system. In September of 1980, the company brought in an Alpha Micro system. Previously, all accounting functions other than payroll had been done by hand, but the company was growing and management wanted better control. It needed reports that would have been cumbersome to generate by hand.

"It's very easy to get tripped up by a lot of bells and whistles into getting something you don't need."

Masad and her colleagues went about computerization very intelligently. First, they made some decisions about where they wanted to be a few years down the road. Since they were considering offering computer services to outside clients in the future, they knew they had to find a machine that could expand. They also knew they wanted to buy from a single vendor. "We didn't want to get into a situation of hardware from one company, software from another and all of them pointing fingers at each other," Masad explained.

The local Alpha Micro dealer was able to offer a complete package of accounts receivable, accounts payable, general ledger, payroll, and job cost. That's not to say, however, that everything was perfect. Masad describes the job cost program as "pitifully inadequate," but here again Masad and her company thought ahead. Because they got a written commitment for a working job cost system, the dealer is now developing a new package, which is due to be installed soon. Once the job cost program is perfected, it will interface with the other accounting programs.

Unlike Dr. Koss, who has never had any trouble with equipment, Ms. Masad initially experienced hardware problems. The floppy disk turned out to be faulty; what's more, it turned out to be too small, and Masad quickly grew tired of "constantly pulling disks in and out." A switch to a Control Data hard disk overcame this roadblock.

Right now, much of the firm's efforts center on bringing the computer up to full speed. The job cost program will be a big addition and the company also wants to make full use of the Alpha's word processing capabilities. Further down the road, says Masad, she hopes to hook up the computer to clients' heating and air conditioning equipment. Such an energy monitoring service would help customers lower their energy costs.

As a first-time computer buyer who did most things right, Masad can offer a few pointers to others. "Whatever you do, get it in writing!" was the first thing she volunteered when I asked her for advice to pass along. She also suggested that buyers study their own operation carefully *before* talking to vendors. "If you don't know what you are trying to do, you won't be able to explain it to the vendors. They will come in and make all kinds of promises, but they won't understand what you need—even if they say they do."

Ms. Masad also believes that computer users should try to cut software costs by starting out with packaged programs. "Before you spend any money on custom software, at least try out a package to see if your business can fit. Often, small things in a package can be fixed or changed, if you have a good vendor. If packages prove to be impossible, then go for custom programming."

The Corporate Computer User

Donald Macleod's case provides a striking example of the growing importance of computers in the corporate world—and of their importance to computer users' careers. Currently a programmer/analyst at Rexnord, Inc., a $1-billion Milwaukee-based conglomerate, Macleod was originally an engineer. When his interest in computers became obvious, he was put in charge of outside time-sharing services, and later asked to chair a committee in charge of transferring certain outside time-sharing applications to in-house desktop computers. About three years ago, he became a full-time member of the corporate DP department when it decided to set up in-house time-sharing.

Since then this former computer user has become a full-fledged computer professional. He has learned to program in COBOL, worked on the development of a comprehensive order entry/inventory system for the six company warehouses around the country, and is now involved in computer-aided-design (CAD) and computer-aided-manufacturing (CAM).

Macleod first encountered ACU through its Benchmark Reports. His company decided that outside time-sharing had become too expensive; so Macleod headed up an investigation into the use of small computers instead. The reports influenced his choice of a Hewlett-Packard System 45.

From Macleod's vantage point, vendors are one of the trouble spots for users, whether they own large computers, small computers, or—like his company—both. "You're always going to have some problems with vendors," he said. His experiences with Datapoint serve as an illustration. Rexnord formerly used a Datapoint machine for order entry, and currently employs it as a front-end communications processor for an IBM mainframe. Macleod describes Datapoint's service record as "spotty."

"In some locations, their service is superb," he said. "In others we had an awful time. We had a lot of trouble getting the maintenance people to react. We felt we were training their people." The moral for small computer users is that they should not rely on a vendor's national reputation, but on its ability to service them locally.

"You're always going to have some problems with vendors."

Macleod has another warning that's worth remembering as small computers continue to make inroads into the corporate environment. "The biggest problems are always people problems. I call it inertia, the reluctance to accept something new on the part of the people who are going to benefit from it. You've got to convince them that the benefits will be worth the effort to change."

ACU Can Help

As you've seen above, ACU members have a wide range of computer experience to share with other users. We'd like to remind you of ACU's local contacts, whose phone numbers are listed on the back cover. Don't forget this valuable resource when you are looking for answers to computer-related questions. If you don't have a contact yet in your area, try ACU's home-office phone referral service. We can often pass along advice from other users, or even put you in touch with another member who has the information you need to put your computer to work.

IBM's User Friendly Operating System—VM/CMS

by Phillip Good, Ph.D.

Sixteen years ago IBM introduced its OS family of operating systems, still in use today. That same year, IBM scientists gave a demonstration of an experimental concept they called "the virtual machine," but sixteen years ago, costs were measured in dollars per kilobyte—and this experiment was an expensive one. The VM (virtual machine) went back on the shelf. Today, personnel, not hardware, is the major expense of data processing, and IBM's virtual machine system program is a marketed reality.

VM offers substantial advantages for the systems programmer, applications programmer and end user alike. With it, your center will profit from decreased down time, greater system flexibility, improved morale, and increased file and system security. But the VM system is not error free, and caution is advised during the first months of use. In this month's article, author Phillip Good looks at the pros and cons.

Designed For The Systems Manager

VM's primary beneficiary was to have been the systems manager. Test and production operating systems, the new and the old, can be run concurrently because each user has his own virtual machine. An operating system conversion or modification can be accomplished without shutting down production activities.

The secondary benefits of the virtual machine are no less important, even if they are less obvious. As computers have grown larger and their operating systems more complex, the user has felt less and less in control. A drop in programmer productivity has accompanied a drop in programmer morale. VM manages the resources of a single IBM or IBM plug-compatible computer so that each user is led to feel he or she has control over the processors, storage, and input/output devices of the entire system.

By entering commands at a VM terminal, a user can perform almost all the functions an operator can perform on a real machine system console. The user can load any of the old or new operating systems, start and stop virtual machine execution, or display and change the contents of registers and storage. In a curious twist—considering VM's OS predecessors—no job control language is needed when compiling, linking or executing under control of VM's conversational monitor system, CMS.

Simplified Job Control

The OS family of operating systems was introduced by IBM in 1964 with the aim of reducing the costs of applications programming. Under OS, applications programs can be written without regard to the input, output, or intermediate storage devices that will be employed. With the aid of the OS *job control language,* specification of input and output devices and their locations can be done at the time of execution. But OS specifications are lengthy, and the OS job control language is cryptic and difficult to learn. The combination of VM's control program (CP) and conversational monitor system (CMS) simplifies job control immensely.

"The programmers loved the new operating system."

- Under OS, a set of cards or card images is required to identify the user, his account and his right to use the machine. VM provides security without the fuss. A password is required to sign on a virtual machine, but thereafter identification is automatic each time a job is submitted. System parameters may be

set at sign-on through the aid of a user profile.

- OS job control provides for time limitations on execution. Usually, the less time that is requested, the higher the priority a job will be given. The user must guess at the optimum for his needs. VM's monitor assigns its own priorities. Highly interactive jobs are normally given the highest priority, receiving frequent access to the real processor for short time slices. Non-interactive users will normally be given larger time slices at less frequent time intervals.

"Many of VM/CMS's best features operate 'behind the scenes,' making it far easier for an end user to execute programs without assistance."

- The OS job control language is both complex and cryptic. By contrast, the VM control languages (CP and CMS) are conversational and easy to learn. Each VM user may have the locations of his or her input/output devices built into the system. The casual or occasional user can run programs without a complete refresher course.

- The program(s) to be performed, their types, and their linkages have to be specified in the OS job control language. VM linkages are automatic. If special handling is required, help functions and menus provide annotated guides to any or all CP, CMS, or system utility functions.

Other VM System Features

The VM system control program includes CP, CMS, two EXECutive languages for creating command modules, RSCS (a remote spooling communications subsystem essential for passing programs and files to and from existing installations), and IPCS, an interactive peripheral control system for diagnosing and controlling systems problems. Unfortunately, two years after VM's commercial release not all of these components are fully operational.

Several installations have complained of having to buy VM twice. They bought the new enhanced version of VM in order to take advantage of optional enhancements such as the powerful new XEDITor. Then, they had to turn right around and buy the original bare-bones version in order to get a working, thoroughly debugged copy of VM itself.

One Company's Experience

Almost a year and a half ago, VM/CMS was introduced to a midwest pharmaceutical company through the back door. "It was the one time I succeeded in pleasing everyone," the computer center manager told me, "at least for a while." A new project and a newly promoted project leader had led to the installation of an additional processor. With the new computer, an IBM 370/148, IBM offered the option of either VM/CMS or OS/VS1 free.

"I think the project leader chose CMS just to be ornery," the center manager said. But the programmers loved the new operating system. Soon all sorts of programmers who had nothing to do with the project had moved their work to the new machine. To counter the project leader's complaints about the invasion, the computer center had IBM install VM/CMS on the old computer. VM/RSCS, the remote spooling communications subsystem, was used to facilitate withdrawal of all non-project users from the project computer. Soon, the old computer began to attract new and inexperienced users. "We're talking about a 3033 now," the center manager said, "just because so many more groups are using the system."

Benefits For Every Systems User

VM offers the ***systems programmer***:

- greater flexibility in scheduling
- greater latitude for experiment

VM provides the ***applications programmer*** with:

- interactive compiling and debugging
- a full screen editor
- a display management system
- simplified program linkages
- executive command modules

VM makes few demands on the ***end user*** and provides:

- full screen data entry
- menu displays
- help functions
- programs that execute with a single command

VM offers ***systems management***

- less down time
- simplified transition from existing systems
- improved file security
- improved system security

There have been some sour notes. The Old Guard demanded retention of OS/VS. The overhead entailed in running OS subordinate to VM, a compatibility feature highly touted by IBM, has been almost prohibitive. And when the center purchased the new VM Systems Product to acquire optional program development tools, it ended up paying for VM twice.

Program Development Tools

VM options include a variety of aids to program development. Among these are three text editors, EDIT, EDGAR and XEDIT; a text formatter, SCRIPT; an interactive instructional system, IIS; and DMS, a display management system.

XEDIT, the latest edition to the series of editors, is the most powerful text editor available today; it is superior to almost any (*any*) dedicated word processing software when coupled with a text formatter such as SCRIPT. Perhaps its one limitation is an inability to display material on the CRT as it will appear in print.

The display management system, DMS, interfaces with any of the applications languages—BASIC, COBOL, FORTRAN, PASCAL or PL1, to provide for full screen data entry. The interactive instructional system IIS is the preferred way to learn about the VM system and its components.

More For The End User

Many of VM/CMS's best features operate "behind the scenes," making it far easier for an end user to execute programs without assistance. One example is full screen data entry. Another is the EXECutive routine, a set of CP/CMS commands assembled by the systems or applications programmer. For example, when the user logs on the system, a profile EXEC may:

- Assign printer and reader locations convenient to the user;
- Assign user-specific functions to the terminal keys;
- Link the user with his or her division and unit data banks;
- Display a full screen menu of possible applications; or
- Execute one or more desired applications programs.

VM's conversational monitor system allows the end user to "chain" from one program to another.

A single word or phrase—"XEDIT REPORT," or "APL"—appears to accomplish each of the desired objectives. In actuality, a series of behind-the-scenes commands written in CP, CMS or one of the two executive languages accomplishes the task.

"Programmer morale and productivity will increase because VM/CMS leaves the user feeling in control."

File and System Security

VM/CMS is a favorite with auditors. Though VM/CMS makes it easy for each individual to gain access to the full power of the computing facility, it makes misuse difficult. Each file access leaves an extensive audit trail. A password is required for the user to access his virtual machine. And in addition to the traditional protection provided by the second-level operating system (whether CMS or OS), VM isolates the real machine from any of its non-privileged users. Students may tinker with the registers and operating system of their virtual machines without affecting any "real" components.

VM/CMS provides for several levels of file security:

- Completely restricted (for payroll and personnel files);
- Read but do not copy (essential for time-sharing vendors);
- Read only (to handle queries to the management information system); and
- Common.

Each file may be protected by up to five levels of passwords. Yet VM lends itself to data base management, precisely because it facilitates file transfer between virtual machines. The conversational facilities make it easy to document and maintain a coherent set of files amenable to central control.

Buy Or Not Buy?

In deciding whether or not to go with VM/CMS, the following pros and cons should be considered.

With it you can all but eliminate scheduled system down times. You can modify the system or train operators and systems programmers without interrupting normal operations.

Programmer morale and productivity will increase because although VM/CMS automatically makes many decisions to improve resource allocation, it leaves the user feeling in control. A full screen editor, interactive debugging, and a display management system facilitate program development.

You can eliminate many costly systems enhancements. For example, the features of ADR's Roscoe, Roscoe Time-Sharing, and Librarian are all found within VM/CMS and IBM's new VM System Product. But beware: you may end up paying for VM twice—once to get the optional enhancements, and once to get a working bare-bones version.

You may not be able to get all the prepackaged software you need. Most software vendors are in the process of converting their packages to run under CMS. But right now, for example, there is no relational data base management system available for use under CMS, not even IBM's own System R.

Question the costs—both hardware and software. You don't have to convert existing programs, since IBM's other operating systems like VS1 or MVS can be run subordinate to VM. But your system overhead will increase by 50 percent when running VS1 or MVS under VM rather than under OS alone. A systems programmer may have to be assigned full time to tuning, debugging and enhancing the system. And you may have to learn to live with the limitations of VM as delivered. ◘

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Why Does Everyone Hate DP? *from page 17*

While computers may be the center of the world in the DP department, many users hardly realize computers exist until something goes wrong or they need a new system. Their world focuses—and rightly so—on selling insurance policies, or manufacturing widgets, or whatever. Users often think of DPers' jobs as a form of maintenance—DPers maintain the computers the way janitors maintain the boiler and the air conditioner.

So users aren't impressed by technical competence. Your colleagues may refer to you in awed tones as "COBOL Wizard" but to users you're just another DP snob until proven innocent. DPers *can* impress users, however, by talking about computer topics in layman's language and by showing an interest in their problems.

They should also understand the reality of computerphobia. Although the word "Hate" in the title is used tongue in cheek, in some cases that's not too strong a term to describe real-life situations. Many people resent and fear the changes brought on by computers. In their eyes, DPers are the cause of those changes.

"For those who are committed to the status quo, new systems will probably not be accepted very graciously," said computer consultant Herb Schwartz in a recent article. "They'll exploit every opportunity to say what a bum system it is. You have to watch the fearful because they can destroy the morale of fellow workers."

If DPers understand users' attitudes, they can prepare for them and even use them to advantage. Just remember that end users are on the firing line every day: dodging bullets from customers, from rivals, from bosses. If you're a DP manager, they are likely to send a few bullets *your* way unless you convince them—through better communications, more user involvement and better education—that you are on their side.

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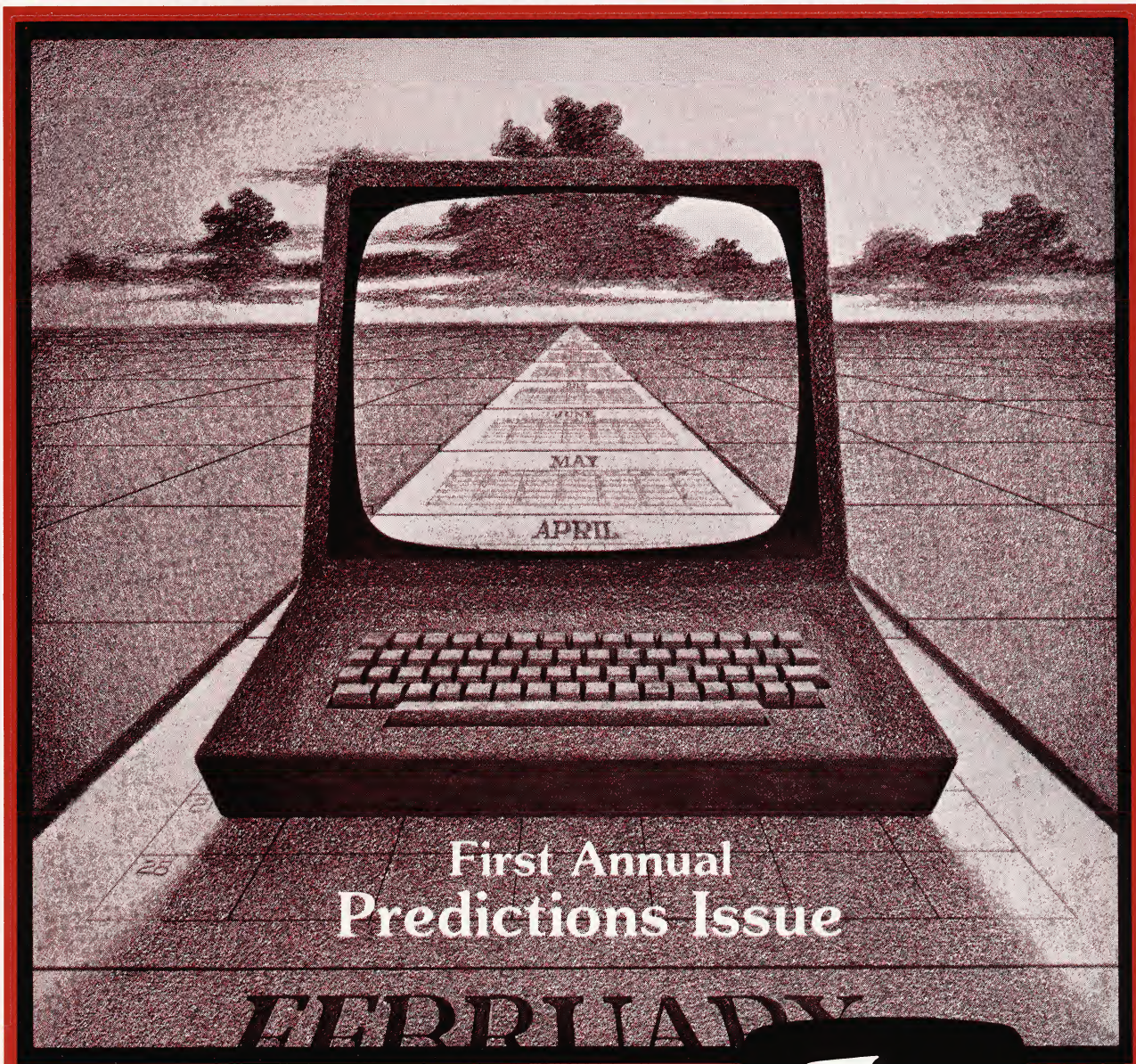

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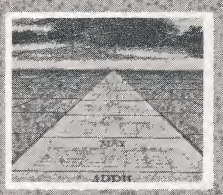

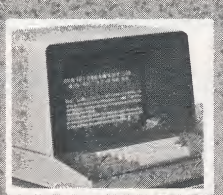

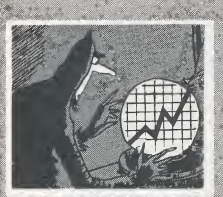

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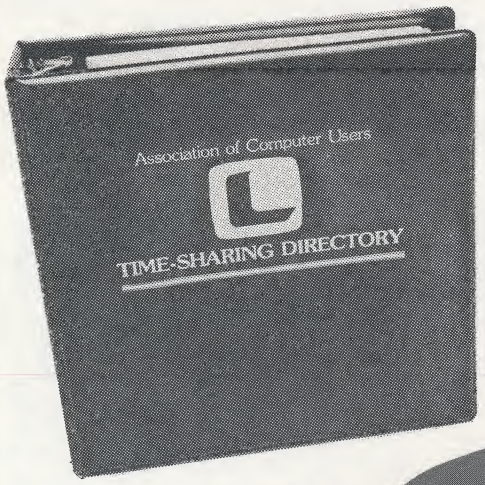

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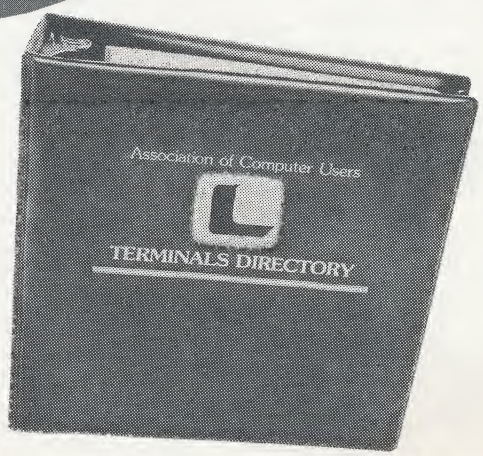

ACU Bulletin

A Monthly Summary of Industry News and Association Activities

ACU Update

Survey Response—as we go to press, we've received about 150 responses to the survey questionnaire concerning the new monthly format for our association publications. Thanks for your response! We were very pleased with an overwhelmingly favorable reaction to the combination of all section newsletters and the bulletin into our expanded *Interactive Computing*. Roughly 70 percent of readers gave the publication's first issue either an excellent or very good rating.

The reaction to our question about advertising was very strong. Nearly two thirds said "no advertising." What's more, many were quite emphatic about it . . . some even saying they'd cancel their membership if we did such a thing! We hear you . . . no ads in ACU publications. This, of course, has been our philosophy in the past—that our consumerist orientation requires objectivity above all else—and it appears that most members want to keep it that way.

The suggestions from members of topics they'd like to see covered in future issues were also very helpful. By far the most widely repeated suggestion was for more reviews and analyses of software for specific applications. Also receiving strong support was the topic of data communications and local networking. Office automation was the next topic most frequently mentioned, followed by requests for articles of a more technical nature, and reviews of the best books in the field. Many other areas received more than one mention, and altogether about three dozen different suggestions were made . . . all very valuable, and for these ideas we thank you.

One idea deserves further comment, since it involves users directly. This is the suggestion that we begin a reader's forum, in which users can pass along the benefit of their experiences to other users. What problems have ***you*** run into, and how did you find the solutions? Do you have any specific advice, or interesting anecdotes? One of the best things about a user association is that we can benefit from each other's background and knowledge. If this idea appeals to you, please write us . . . we'd like to hear your story.

There were a number of requests for more **benchmark reviews** of computers, so we're pleased to announce the beginning of a regular column in *Interactive Computing* devoted to our benchmark efforts. Every month, starting with our **April, 1982** issue, we'll carry a summary evaluation on another specific system. In April, we'll start off with the popular Wang 2200SVP small computer. In issues to come we'll cover other selected systems from ACU's library of BENCHMARK REPORTS. Of course, the complete reports contain much more detail on the systems, as well as the results of additional tests . . . so we still suggest that you subscribe to the full series if you are seriously considering the purchase of a small system.

Also in April, I'll begin a regular column that will cover a variety of DP management topics. It should be of special interest to those of you using computers or office automation equipment in the business world.

hs

Industry Update

Ethernet Strategy to Fail, Says Consulting Firm

Xerox's highly-publicized **Ethernet**, a local-area network for office products, is headed for a disastrous failure that will pull down the firm's entire office computer line. That's the conclusion reached by **Strategic, Inc.**, a San Jose market research firm. The problem, says Strategic, is that the baseband approach used by Ethernet has too little capacity to serve the needs of future applications. Broadband systems, such as **Wangnet**, offer greater channel space which can be used for video, voice, and large-scale data transmission. Xerox responded to the dire prediction with a statement saying that customer satisfaction and order backlogs give it confidence in its office strategy.

IBM to Remove Suspected Carcinogen from Printers, Copiers

While still denying that the chemical trinitrofluorenone (**TNF**) poses any risk, **IBM** plans to remove the substance from its products and retrofit existing customer installations. TNF became highly controversial last year (see Nov. '80 Bulletin) when it was revealed that IBM had known of the chemical's possible carcinogenic nature all along, yet still used it in the photoconductors of its 3800 laser printer, 3896 tape-to-document converter, and some copiers. Now, the firm has come up with a replacement. Though claiming the change is being made for "business and technical reasons," an IBM spokesman notes that "this conversion should alleviate any remaining concerns."

Apple to End Mail Order Sales

Apple dealers have long been undercut by low-priced mail order sales . . . but not any more, if Apple gets its way. Authorized dealers are being required to sign an agreement promising not to sell Apple products through the mail; those that refuse will lose their dealerships. "Mail order sales are neither suited to providing consumer education nor structured to provide the consumer satisfaction that has become associated with the Apple name," said A.C. Markkula, Jr., the company's president. Some dealers are furious, though, alleging restraint of trade, and the matter is now in a federal court.

NonStop Computer To Get Competition

Until now, **Tandem Computers** has had the market for non-interruptable computers practically to itself, with the firm's NonStop model virtually one of a kind. Now Tandem is going to have competition from **Stratus Computers**, a one-year-old Natick, Mass. firm. The newly-announced Stratus/32 features hardware-based redundancy, which the firm says makes conversion of software from other types of computers easier than the Tandem approach. **DEC** has also disclosed its intention to offer a redundant VAX computer, but details have not yet been revealed.

Terminals Not All Equal, Study Shows

Datapro Research recently surveyed users to find out which display terminals are the most likeable. Here are the results—averaged to include all factors. Where no model or series number is indicated, the result is a combination of all the firm's alphanumeric display terminals. The rating is on a scale of 1 to 4, with 4 as the best possible score.

HP 2600	4.0	Memorex	3.3
Tektronix	3.8	Four Phase	3.2
DEC VT-100	3.8	ITT Courier	3.2
IBM	3.6	Burroughs	3.0
Beehive	3.5	Data General	3.0
Datamation	3.5	Harris	3.0
Teletype 40	3.5	MDS Trivex	3.0
ADDS	3.3	Telex 270	3.0
Heath	3.3	Univac	2.8
Honeywell VIP	3.3	Hazeltine	2.3
Lear Siegler	3.3		

New Product News

Texas Instruments
Computer Systems Division
P.O. Box 2909
Austin, TX 78769
(512) 250-7111

A new series of small computers targeted at first-time users has been unveiled by **Texas Instruments.** The **Business System 200** family's first models are four systems, the 220, 240, 250 and 251. All are single-user desktop designs with a 12" display terminal, detachable keyboard, and separate processor/disk drive cabinet. Each incorporates 64,000 characters of memory; the models differ in disk storage capacity, with the Model 220 using a pair of double-sided, double-density 5" diskettes for a total of 1.2 million characters storage. The other models feature up to 11.2 million character Winchester hard disks. Applications software written in Cobol offers a range of accounting functions and word processing. Prices start at $6,200. TI says shipments are now beginning.

Altos Computer Systems
2360 Bering Dr.
San Jose, CA 95131
(408) 946-6700

Altos Computer Systems has introduced a new group of powerful 16-bit microcomputers which offer a choice of widely used operating systems. The **ACS8600** series computers can run under CP/M-86, MP/M-86, Oasis-16, or Xenix. Xenix is a microprocessor version of Unix (trademark Bell Labs) developed by Microsoft. The systems support up to eight users, and have error-correcting memory of 128,000 to one million characters. Both floppy and hard disk storage are offered. Languages include Basic, Cobol, Pascal, and Fortran; the Xenix operating system includes a C language compiler, text editing, typesetting, and other features. Prices start at $8,990 for floppy-based systems and $12,990 for a system with 10-million character hard disk. Shipments began in January, says Altos.

Apple Computer Inc.
10260 Bandley Dr.
Cupertino, CA 95014
(408) 996-1010

A new version of the **Apple III** personal computer is now ready, featuring more memory and an optional hard disk. Designed to correct the manufacturing and reliability problems which plagued the original version when it was released and then withdrawn last year, the new Apple III is said to be up to speed. It supports up to 256,000 characters of memory (twice the capacity of the previous version), and an optional hard disk has 5 million characters of storage. A system with 128K memory, Visicalc, monitor and Business Basic is priced at only $4,190; the hard disk is $3,499 and the upgrade to 256K memory costs $800.

Texas Instruments' new Business System 200

The new Apple III, with optional hard disk

ACU's New and Renewing Members

Applications Received in **November 1981**

"Thank-you!" to all renewing members for your continuing support, and welcome aboard to new members just signing up. The lst below shows renewals and new members along with the company they're affiliated with, if one was indicated. The asterisks after the names of renewing members represent the number of years they have been a member.

E. A. Abrahamson ****
Joel Abramowitz ***
U.S. Trust Co. of N.Y.
Richard L. Accurso *
Canada Dry Corporation
Robert B. Adams **
Buckeye Pipeline Company
Frederick Allard **
Health-Tex Inc.
Rick Alzati **
Florida Power & Light
Arsenio J. Amores **
Space Age Computer Sys., Inc.
Edward F. Anderson *****
Singer Company
Howell Anderson ***
Churchill Weavers, Inc.
M. J. Anderson **
Astrocom Corporation
W. C. Anderson ***
Clairol, Inc.
Paul M. Andrade
Magnex Corp.
James A. Anzalone **
Arthur Young & Company
Jose Aragones
KTC Sistemas, C.A.
Eloy Areu **
University of Maryland
Eileen Armstrong **
Mony
Murray Armstrong *
Koffler Stores Ltd.
J. Lowell Ashby *
Mid-American Control Corp.
Michael N. Ashman
Thomas F. Ashworth **
Thomas F. Ashworth, C.P.A.
Louis Atkin *
Genesee Scrap & Tin Baling
David Awerbuch **
Concourse Computing Consult.
F. David Ayers **
Ambicare, Inc.
Mark Baer ***
Hewlett-Packard
Joseph A. Bailey, Jr.
Deloitte Haskins & Sells
Robert L. Bailey
U. C. Berkely
Dale E. Bailly *****
Heublein, Inc.
Thomas Baker
Arthur Johnson Reg. High Sch.
Peter Ballard ***
Abell Communications
William G. Banes *
Banes Corp.
Patricia Baranowski **
Township High School
Joseph G. Barmess, Jr. ***
Harco Corporation
Frank Bartolone ***
Economy Engineering Company
Willard C. Bass **
G.D. Searle & Co.
T. C. Bates II **
Information Management Group
John Beachy
Cooper Market, Ltd.
Larry E. Berg ***
Indiana Farm Bureau Coop Assoc.
R. W. Berg **
Zimmer-USA
Ray Bergendoff *****
IBIS Corporation
Thomas W. Berken, ***
Int'l Graphics Div.
Moore Bus.
Steve Berry **
Shelton Berry
Robert W. Beth **
Matrix Computer Corp.
Noel E. Bethe *******
FMC Corp., Ope Div.
Daniel E. Bevington **
First Interstate Serv. Co.
Jim Biernacki
Microdata Corp.
K. W. Bitticks ***
Delphi Systems, Inc.
Roger W. Blakeney *
Guild Wineries & Distilleries
Norman L. Bloch *
Bloch & Bloch Ltd.
Jerry Block **
Block, Good & Gagerman
Floyd Bloom ***
The Simco Company, Inc.
Warren Blossom
Microdata Corp.
Kenneth G. Bobis **
Kenwood Data Assoc., Inc.
Gilbert W. Boettcher **
Control Data Corp.
Roger Bonjour
Yorkshire Trust Company
John Bonne
Microdata Corporation
Thomas R. Bookless ****
Howmet Aluminum Corp.
Carl Bowers **
Larry F. Bowman **
Plante & Moran
James Bowyer
Associates Corp. of N. America
Edward Boyes
Hartley Comp. Appl. Pty. Ltd.
Gary Brannan ******
Georgia-Pacific Corp.
Donald F. Breidt
Bonded Services
Winston Brooke ***
Brooke & Freeman
C. Bennett Brown, Jr. ***
Smith, Batchelder & Rugg
LeRoy W. Brown **
Ruan Transport Corp.
Ray Brown **
Conva Indemmity Co.
Thomas D. Brown **
Shankman Laboratories
W. L. Brown
Porter & Chester Institute
Charles Browning *******
Phelps Dodge Corp.
Peter E. Brumme *****
Code & Code, Inc.
Howard Brummer **
Melvin Simon & Assoc., Inc.
Sandra Bryant ***
Transilwrap Company, Inc.
Bruce Burns *
Remak Industries
L. R. Buschman *****
McAuto
John F. Bush
Indiana State University
Ashok Butani
Ovex Business Systems Ltd.
Edward C. Butler *
Robb, Peck, Moccooey & Co., Inc.
Peter D. Callaghan **
General Foods, Inc.
John E. Callahan ******
Borden, Inc.
Allan Cameron *
NBTEL
John H. Campbell III ***
ADP Network Services
Richard G. Cannon ***
The Church of Jesus Christ
John J. Cargille **
R.P. Cargille Laboratories
Faith Carlson
Pioneer Products, Inc.
Gary Carlson **
American Natural Service Co.
Thomas Carper **
Petroleum Prod. Corp.
Shirley Carr *
City of Boston
Laurence Carter ******
Del Monte Corporation
Gene Chapin *
Ronald W. Chapman **
City of Dearborn
Lovell Chase
Microdata Corporation
Henry Chiu
Dennis Chorney ***
Standard Perforating
John A. Churylo *
Daniels & Associates, Inc.
Diane W. Cikoski *
Burroughs Corporation
Samuel Cirelli **
Littlewood, Shain & Company
John Clairborne III *******
John Nuveen & Co., Inc.
T. Clark **
Wardcop Limited
Cassius M. Clay *****
C.M. Clay
Robert B. Clere **
Hartford Insurance Group
J. R. Cobb ***
Phillips Petroleum Company
Don D. Coehring **
Derrick Service Internat'l
Sam Cohen
Tab Products Company
Howard A. Cohn ***
Universal Television Co.
Robert H. Cole **
Permian Business Group
Phillip Coleman **
United Home Care Service, Inc.
D. P. Colin *
BL Systems Ltd.
Robert A. Colyer **
Lamoni Municipal Utilities
Frank Contigiani *
Vertex Systems, Inc.
Virginia L. Coolidge ***
Automated Decisions Corp.
S. Franklin Coron ***
Dyson Shipping Co., Inc.
Angela Corrieri
AMC Enterprises
Eddie Cortes **
Abbott Chemicals, Inc.
A M. Cosentino *
Microdata Corporation
Wesley H. Cowley *
Mercury Motor Express
Connell G. Craig *****
Economic Sciences Corp.
Daza Craig **
G.E. Info. Services Co.
John V. Croul ***
Behr Process Corporation
Roger Cruon *
L'Amiral
James Cupec *******
First Nat'l Bank of Chicago
David Curbo
Cannon & Company
R. H. Curran ***
Gulf Oil Corporation
Eugene Dailey **
Amcom Data Processing
Pappyn Daniel **
PVBA Datakor
Richard Davidson ***
State St. Bank & Trust
Mariam H. Davis *
Steres, Alpert & Carne
Robert E. Davis ***
Bessemer & Lake Erie R.R.
M. J. DeFrance
Chase Manhattan Bank
Michael R. Denault **
Peat, Marwick, Mitchell & Co.
Jo De Simone ***
Foster Wheeler Energy Corp.
William L. Dexter **
Union Oil Company of Calif.
David J. Diamond **
Data Products, Inc.
Joseph A. DiCioccio *
C.S.I.B.M.
Ben Dobson
Affiliated Bankshares of Colo.
Robert Dodge **
A. Johnson & Co., Inc.
Paul Doering *
Cassis Corp.
James J. Doody
Sweetheart Cup Corporation
Kermit H. Dotson, Jr.
Union Carbide Corp.
William Dougherty **
Conard-Pyle Co.
John T. Driscoll *
Interstate United Corporation
Sally J. Dudley
Hewlett-Packard
Alton Duncan *
Robinson Grimes & Co.
Bill Dunigan
First Interstate Bank of AZ
William Dunn *
Leader Federal Savings & Loan
W. A. Dusenbury
Speer Cushion Co.
Angus M. Duthie **
F. H. Prince Securities Corp.

Ann E. Dzuna **
Gulf Oil Corp.
S. V. Edens ***
Telefile Computer Products
Lew Egol ***
Nuclear Associates
Lynne Elliott **
Ryder Scott Co.
Arthur D. Ellis **
Data Equipment Sales Co.
A. J. Ellman *
Cadillac Fairview Corp. Ltd.
Raymond A. Elseth ***
Fiat — Allis CMI
Jan Engel **
Stegman & Assoc.
Birgul Erengil *
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Stephen Evans *
Alexander Grant & Co.
John P. Fairman *
Kalama Chemical Inc.
John R. Fall ***
Computer Software Develop. Co.
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E. F. Farrell ***
RCA — Computer Services
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Metal Masters Foodservice Inc.
Annette Fern **
SPSS, Inc.
Paul Few ***
Nebraskans for Public Tel.
Robert Fidelman **
Advanced Control Systems
Robert E. Fidoten
PPG Industries, Inc.
Gerald J. Fisher *
Reichert, Fisher & Co.
Gerald Fleming
Microdata Corporation
Gary Flood *
Church of Jesus Christ
C. L. Forbes **
U.S. General Accounting Office
Larry K. Ford
Lake Ronel Oil Co.
Raymond F. Forthuber **
PHH Group, Inc.
Susan Foster
OCIS — Temple University
Tom Foster **
Main Hurdman
P. J. Fox **
Exxon Corporation
Harry J. Foxwell *
American Chemical Society
Joe Fredican ****
The Flintkote Company
Jerome Friedman **
Sossner Steel Stamps, Inc.
Richard Frischkorn **
Alan Frisoni ***
Frisoni & Assoc.
Alan Frotman ***
American Inst. of CPA's
Donald Fuller *
Microdata Corporation
Donald D. Fusaro *
Informative Data Facilities
Joseph I. Gaabelein *
Coopers & Lybrand
M. J. Gallagher
Quarto Software BV
Jose Joaquin Garcia-Luna
University of Hawaii
Jean Garfield ****
Northewestern Mutual Life Ins.
John C. Gargaro
Old Stone Bank
William Garrett **
Crawford & Co.
Tom Garske **
Charles Bailly & Co.
J. W. Gates ***
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Alex Gelbman **
Coulter Electronics, Inc.
Donald Genasci **
Genris Computer Service
John Geoffroy
Construction Data Control, Inc.
Ralph Giannato *****
Polaroid Corp.
L. A. Giardi ***
Universal Design, Inc.
Lenn Gilbert *
EC Industries, Inc.
George A. Gillette **
Washington Nat'l Ins. Co.
Gary D. Ginter **
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George Tiu Go
Integrated Computer Systems
James Goard **
Vancouver Community College
Alan L. Goldberg ***
Deloitte Haskins & Sells
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G.D.D.S., Inc.
Walter E. Golder **
Ann L. Goldman **
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John N. Gonzales **
G.E. Information Services Co.
Jorge Diaz Gonzalez
J/D Systems
Jo Goodson *
Insilco
Maureen Gorman **
Arthur Anderson & Co.
LeRoy Cecil Grainger *
Grainger, Realtors
Mark D. Grant **
Aronson, Greene, Fisher
Barry Greebel
Continental Data Systems
Ralph Green, Jr. *******
Martin Marietta Corp.
James K. Greiner *
Accountech Systems, Inc.
Rand Groh *
Security Pacific National Bank
Thomas R. Gross
Logicon, Inc.
Norman Grund *
Keramos Inc.
James S. Guastavino ****
Doubleday and Company
Joan Gucciardi **
Emjay Corporation
Roger Haessig ***
Gilpin Inc.
R. W. Halliburton ***
Bank of Oklahoma
Lawrence S. Halpern **
Halpern, Schnidman & Co.
S. Thomas Hamilton, Jr.
Hamilton & Company, Chartered
Robert J. Hammer
Delphi Systems, Inc.
Paul T. Hansen *
Hayes/Hill
Daniel J. Hanssel
KVS Information Systems, Inc.
John Harkness ***
District Trust Co.
Merle Harnish
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Kirk Hayes **
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William Heap ***
NW Bank of Minneapolis
Kurt Heckscher **
Fast Automated Systems, Inc.
Larry Heimrath **
Marsh And McLennan
Robert L. Herbert **
Hausser & Taylor
J. R. Herbster **
Exxon Company, USA
Herbert J. Hering
Great Lakes Fruit & Produce Inc.
Jorge Herrera **
Compusoft Systems
Charles W. Hewitt ***
Avco Computer Services
J. A. Heyser ***
American Telephone & Telegraph
Jim Hightower ***
Calif. State Univ. & Colleges
John Hill ***
Wisconsin Credit Union League
Robert C. Hill *
James B. Himler
Mai/Sorbus Service Div.
Richard Ho
Syska & Hennessy
Joe Hodge *****
Hospital Corp of America
Jerome Hoffman *
Forbes, Inc.
Peter Hoguet *
Gayle Holman ***
Rubbermaid, Inc.
Robert F. Holtje
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J. V. Horsting ***
Profit By Air, Inc.
Alan P. Houck ***
Minihan, Kernutt, Stokes & Co.
Ivan Hrabowsky *
Praxiscomputer, Inc.
Paul Huffington **
Winton Evaluators Ltd.
John Hughes *
Bell Laboratories
Stephen R. Hunter
The Traffic Service Corp.
Robert Huston **
Litton Melonics Info. Center
Portia Isaacson **
Future Computing, Inc.
T. W. Jackson
Nordahl & Associates
Raymond Jacques *****
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Reynold Jarecki **
Franciscan Retreat
Nathan S. Jarnigan, Jr. ***
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Remington Arms Co., Inc.
Warren S. Jeffs
Jeffs & Jeffs
Pete Jenkins *
Pittsburgh & New England Truck.
Carl Jeremias *
Microdata Corp.
Jan Arild Johansen *
Ola Tandberg Elektro
Brian K. Johnson *
McMahon Hartman Amundson & Co.
Michael C. Johnson
Systems Support, Inc.
Steve Johnson **
Johnson's Handy Rent All Inc.
H. Walter Johnson ***
Raychem Corp.
Dennis Paul Jones **
Beatrice Foods, Co.
Norm Jones **
Morton F. Plant Hospital
R. R. Jordan **
Sargent Ind. Sweeney Div.
Gerald P. Joyce *
Standard Federal Savings
Michel Kadish ***
Compal Computer Systems
Jack Kajfasz *****
Moore Business Systems
C. E. Kanneen *****
FMC Corp.
Ernest Kaplan *
Ernest Kaplan & Co.
Geozge Kargilis *
Warren Consolidated Schools
S. L. Karp **
Raytheon Co.
John D. Karraker **
General Electric Co.
Alex W. Kask *******
Ernst & Whinney
Rene M. Katto ***
Theo H. Davies
S. David Kaufman ***
SDK Medical Computer Services
Steven B. Kay **
Calma
Cyril Kearney ***
Touche Ross & Company
Alan F. Kehr ***
Manufacturers Equipment Co.
Mark Kelly
Office Automation Systems
Richard T. Kelley
American Software Co.
Marian Kennedy **
Good Impressions
Gerlad Kepner, Jr. ***
Arthur Young & Co.
Karl G. King ***
Crowe, Chizek and Co.
Robert E. King ***
Holiday Inns, Inc.
I. Kirsteins ****
Imasco Assoc. Products Ltd.
Esther J. Klakamp **
Millcreek Township Supervisors
John A. Kneisly ***
Management Foresight, Inc.
John Knight *
Heidelberg Eastern, Inc.
Philip W. Knights **
Makoto Kohno **
NEC Systems Laboratory
Jerry L. Koory *
The Rand Corporation
Alan Kornbluth *****
American Express
Bruce Kraemer ***
Foxboro Company
Arnold A. Kraft
Digital Equipment Corp.
Sidney W. Kraft *******
Boeing Computer Services Co.
Clint Kreitner
American Info Systems, Inc.

We've run out of room!
Thanks again to all new and renewing members from November 1981. Look for the continuation of this list in our next issue.

ACU's First Annual Predictions Issue

by Jesse Berst

The computer industry is constantly changing. That's what makes it so exciting. That's also what makes it so hard to master. As soon as you make one adjustment, along comes a development that threatens to change everything again.

Those new developments can swamp you if you are not prepared. When you are busy trying to keep your head above water, it's easy not to notice the next wave coming in. At one time or another, most of us have gotten so far behind that we found ourselves ***reacting*** *instead of acting.*

To help ACU members who don't have the time to keep as up-to-date as they should, we assembled a panel of knowledgeable ACU members to give us their opinions. Most of them act as local contacts in their area of expertise. Associate Editor Jesse Berst asked these experts what ACU members should expect during the next 12 months, and they predicted that the following developments will make waves during 1982.

Communications Will Be A Crucial Issue

Most of the panel members interviewed for this article agreed that *communications* will be one of 1982's biggest buzzwords. "The 1980s will be dominated by communications, regardless of what type or size computer you use," predicts ACU Board Member Ankarath Unni. "Communications will increase in prominence because it leads to everything else."

Indeed, many of the predictions made in this article involve communication between computers. "It's certainly not too early to worry about communications," said Richard Accurso. "For example, here at Canada Dry Corporation we are trying to establish a formal network of minicomputers between various subsidiary companies. That creates many communications problems. And the further we get in, the more we realize that word processing has to fit in, too, or we are going to lose control. DP and WP have to transfer data back and forth—they have to be able to talk to each other."

Networking and Distributed Processing Will Expand

Distributed processing will continue to grow in importance. Regional offices distant from corporate headquarters will find it cheaper and more convenient to write programs for inexpensive computers in their workplace. They will still, however, need access to the data stored in the central computer.

"Distributed processing will go a lot further than people think," Accurso said. "Networks are here today, but not too many people are using them except for remote job entry and a small amount of independent processing. But networks will soon go beyond just the sharing of data bases. For instance, we are experimenting with downloading information from a data base onto a standalone microcomputer that then produces graphics. Our analysts can use the micro to manipulate the data."

"It's not too soon to start integrating the office."

Ultimately, companies will tie all of their gear together: mainframes, minis, terminals, word processors, intelligent copiers, and so on. Many of them will begin this task in 1982.

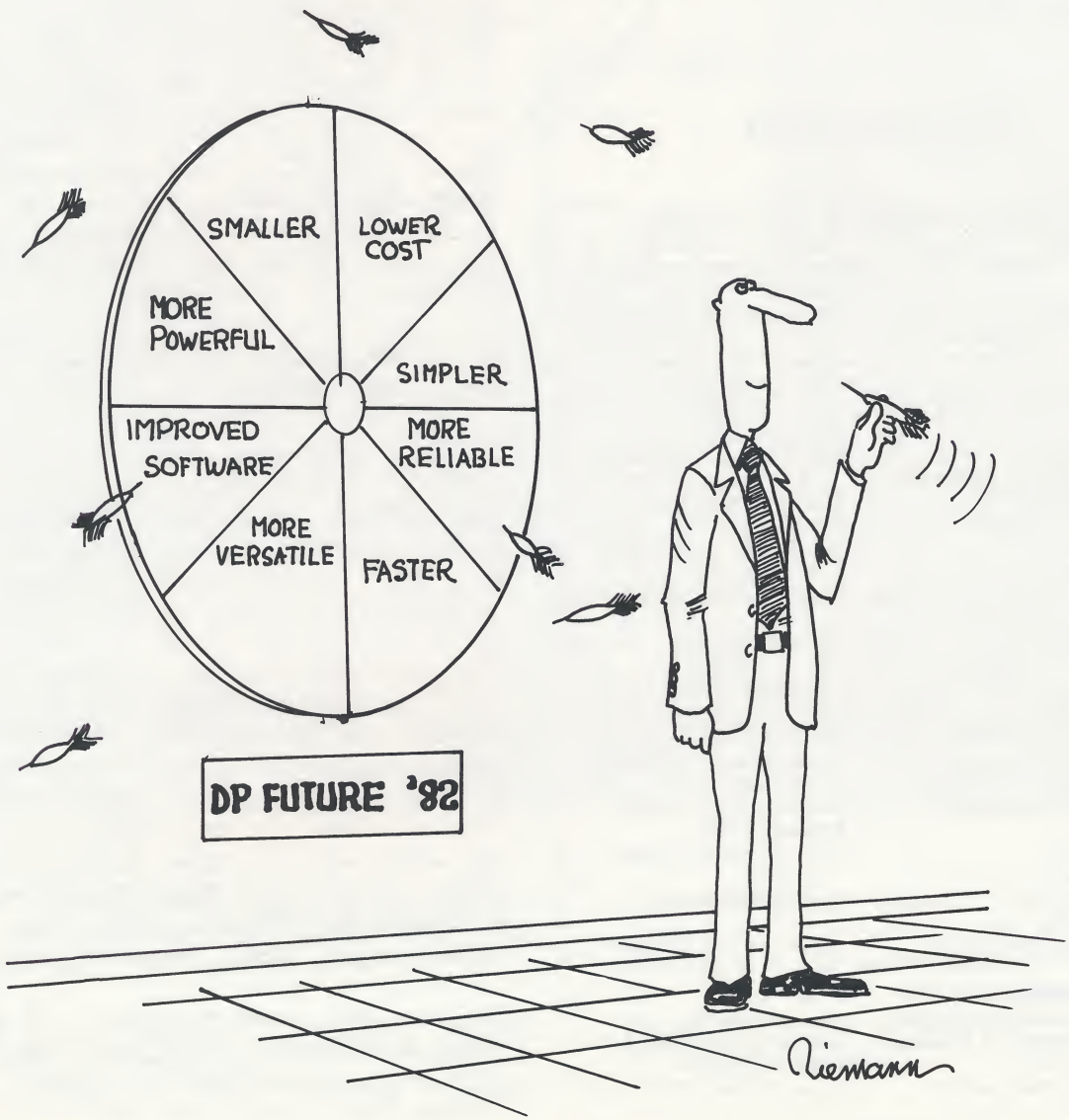
SNA Will Become The *De Facto* Standard

Seventy percent of installed corporate computers

are IBM or IBM compatible. No wonder, then, that IBM's Systems Network Architecture (SNA) is beginning to look like the *de facto* communications standard. Wang, Data General, Digital and other major minicomputer manufacturers have already announced their intention to support it.

"IBM is going to set the *de facto* standard," said Arno Laur. "They've done it in the past, and who else could do it now? Who else could put the capital investment into it? The standards committees can't get untracked from their own bureaucracy, so IBM will step in and become the standard."

The unanimous conclusion of our panel: No one has the clout to unseat IBM. SNA will become an industry standard.



Office Automation: From Theory To Practice

"We think that it is not too soon to integrate the office," said Richard Jarcik, whose firm handles third-party insurance administration (similar to Blue Cross). "In the past year, we put all the relevant information on the mainframe and out to the users' desks. We automated all the forms. It went very well and it has changed everything—the way users work, the way executives get the information they need and the way management thinks of automation."

THE ACU PANEL

Paul Abrahams
Consulting Computer Scientist
Deerfield, MA
Member, WP Section

Richard Accurso
Director of Corporate MIS
Canada Dry Corporation
New York, NY
Member, WP & DP Sections

Aram Bedrosian
Mgr., Systems & Programming
TWA - New York, NY
Chairman, DP Section

Richard Dumas
Treasurer
Commodity Research Institute
Mountain View, CA
Local Contact, TS Section

Robert Jarcik
Manager, Dept. of Information Resources Management
Boon Chapman - Austin, TX
Local Contact, LC Section

Otto Hammer
Group Director
Ernst & Whinney
Cleveland, OH
Local Contact, DP Section

William LaRocque
Director, Automation Services
National Academy of Sciences
Washington, D.C.
Local Contact, MC Section

Arno Laur
Manager of Systems and Programming
Maritime Overseas Corp.
New York, NY
Local Contact, SC Section

Brian McCullough
Field Engineer
NCR Corporation
Canada
Local Contact, HH Section

Melvin D. Nimer
Controller
Granite Mill Fixture Co.
Salt Lake City, UT
Local Contact, SC Section

Philip Sussman
Project Manager, Business Development
International Paper Co.
New York, NY
Local Contact, TS & SC Sections

Ankarath Unni
Mgr., Financial Systems and MIS
Sun Production Co.
Dallas, TX
Chairman, MC Section

D. T. Wu
Research Fellow
DuPont De Nemours & Co.
Philadelphia, PA
Local Contact, TS Section

"Now we have absorbed the word processing function and, over the next 18 months, we want to tie the office together. Some things are still too expensive—automatic scheduling, and mainframe access by field representatives calling in from the customer's office, for example. But we are looking seriously at electronic mail, electronic reminder files, personal computers for forecasting that can access the mainframe for the data they need, and more."

Ankarath Unni reported that Sun Production Company is also planning for office automation during the next two years. As he sees it, the project will involve the convergence of office functions with data processing, networking, and communications. Unni's company wants an automated office that will make it easier for users to get to the data they need. The goal is not just to speed up clerical tasks, but to help managers make decisions.

Word Processors Will Become More Sophisticated

Today, most word processors—whether dedicated units or small computers with WP software—handle only basic functions. Within the next year or two, however, some companies may bring out machines incorporating advanced features currently found only on large computer systems.

The new breed of word processors will have all functions integrated into a single system. For instance, you will be able to receive data from a remote source, do VisiCalc-type calculations, turn those figures into a chart, type a letter incorporating the chart, sort your mailing list for the names you want, send the letter electronically to some names, then print out the letter and chart and send it through the USPS to other names—all at the same terminal without reentering information.

And the new word processors will incorporate some new functions. "Word processing capabilities will become more sophisticated due to technology transfer from academia into commercial products,"

Look For These Trends In 1982

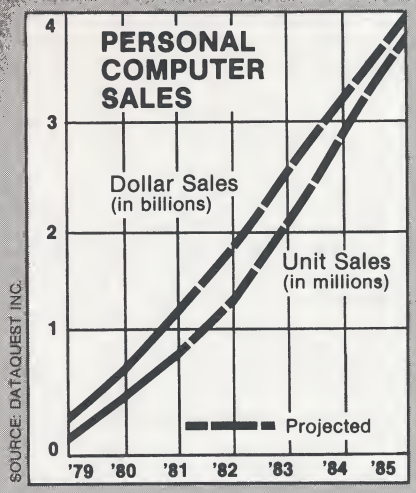
Big Changes In Personal Computers

Falling prices and new names at the top of the heap—these are two of the changes you can expect in the personal computer market. A recent study by SRI International, a California-based research firm, predicted that prices will continue to drop dramatically. By 1985, the study said, computer power equivalent to an Apple II will fall to $500 (in today's dollars).

Up to now, there has been little real competition and the market has been forgiving. That's changing fast with the entry of the big guns from the large computer and office equipment fields. The hot competition is forcing companies to reassess their products and fine tune their strategies. Those that guess wrong may find themselves out of the running, even if they are thriving now.

Indeed, a new set of industry leaders is likely by 1985. Currently, Apple is ahead with about 23 percent of the market (measured in dollar sales), followed by Tandy with 20 percent and Commodore with 10 percent. But nearly everyone agrees that IBM's new Personal Computer is going to grab a big slice of the pie.

In addition to IBM, SRI predicted that the industry leaders of 1985 will include another American manufacturer (Xerox or possibly Burroughs), a major American retailer (Radio Shack with Sears as the dark horse), and two Japanese suppliers (Matsushita and NEC, with Sony as a dark horse).



An Exploding Market For Personal Computers

Everyone agrees that personal computer sales will boom over the next few years. The arguments start, however, when you ask who will be doing the buying. Some manufacturers are betting on small businessmen. Others are trying to zero in on specific target groups, such as engineers. Still others are aiming for corporate managers and executives.

A few personal computer makers are gambling on a broad home market that doesn't yet exist. Though companies like Texas Instruments, Mattel and Atari have spend millions trying to get into the home, they have not yet been able to lure buyers in big numbers. Most observers predict that the home market won't take off until the price for a complete system drops below $1,000, from its current $2-4,000 level. That won't happen, say the experts, until 1985 or so.

A Worsening People Shortage

The booming computer industry has one big bottleneck: a shortage of qualified people to program and operate the machines. According to observers, the crisis will worsen over the next few years. The Labor Department predicts that demand for computer programmers will double by 1990. Consider these projections by the Bureau of Labor Statistics for growth in employment from 1978 to 1990: Data processing machine mechanics, 148-173%; systems analysts, 108-123%; computer operators, 88-101%.

Don't expect much help from the nation's colleges. Their output of qualified graduates is running an estimated two thirds below demand. The only hope seems to be "friendly" languages and database management systems that allow users to do a portion of their own programming. Until these productivity aids have been further refined, the struggle to find and retain DP personnel will continue to intensify.

predicted Paul Abrahams. "The Xerox Star is a glimmer of what we can expect, and such capabilities will come down in price."

"We will see terminals with bit-mapped displays that can show different type fonts," he continued, "more sophisticated text formatting, complex cross-referencing and more creative use of screens. I know of one system, for example, that is developing a split screen approach that allows you to see what the text will look like on the page at the same time you can see the format commands for making changes."

continued . . .

More Trends To Watch For . . .

The Demise Of The Dedicated Word Processor?

At a recent conference, a noted industry observer predicted the end of the single-use, standalone word processor. Robert Wickham, vice president of marketing for Vector Graphic, said that the changing needs of office information processing will result in more shared systems and multi-purpose microcomputers.

Such equipment might perform word processing, financial planning and graphics—all at the same time. Word processing might also be combined with database management, accounting, electronic mail, and so on.

Today, it costs more to buy a dedicated word processor than it does to purchase a multi-use microcomputer with word processing software. Often the diference is as much as $5,000. In their rush to get in on the small computer boom, some companies are undercutting their own products. Xerox, IBM, and Lanier, for instance, have introduced microcomputers with word processing capabilities that sell for thousands of dollars less than dedicated word processors available through other divisions of their companies.

Multi-use micros do have a few drawbacks. Most of them do not offer the high quality training, the ease of use or the hand-holding support that come with dedicated machines. Still, that situation is improving. Meanwhile, more and more word processing buyers are realizing that microcomputers give them more versatility for less money.

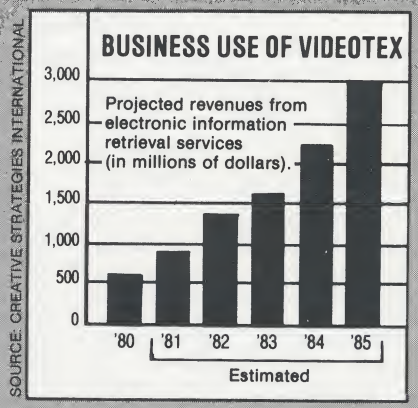
Tough Times Ahead For The Minicomputer Pioneers

The onslaught of inexpensive small computers is jeopardizing the profitability of some of the minicomputer manufacturers who pioneered the small business market in the 1970s. Troubled Data General has been plagued by lawsuits from dealers and an exodus of management talent. Meanwhile, Quantel's growth has slowed sharply, Basic Four's income fell 39 percent last year, and Microdata recorded a loss of $8 million.

The challenge comes largely from upstart microcomputer makers who are growing up, and from several trends. The mini makers' traditional market—systems costing from $40,000 to $80,000—is becoming saturated. Moreover, many customers are now choosing to automate in a piecemeal fashion. They begin with a few programs on a small computer, then add more software and hardware as needed.

On top of that, falling prices have made traditional sales channels too expensive. Direct sales forces and third party systems houses are too costly for systems selling for less than $20,000. Some of the mini makers have responded by courting independent retailers or opening their own stores or showrooms. And some have added their own low cost systems.

Will their efforts succeed in keeping them afloat? "If management does its homework, some of these companies will come through this challenge," predicted Morgan Stanley principal Ulric Weil in *Business Week Magazine*. "The others will just go the way of all flesh."



A Growing Demand For Business Oriented Videotex

The home market for videotex—interactive services by cable television—gets a lot of press, but it is only beginning to emerge. Although prospects are looking up, it has been a losing proposition so far. Home videotex is unlikely to be a major success before 1985, because the services are still too expensive for most consumers.

Corporate users, however, will pay a premium to get data on a more timely basis. They have been spending at an accelerating rate to obtain electronically stored information. There are already more than eight hundred on-line services doing an estimated $1 billion, and revenues are growing 30 percent per year.

Some of the most popular data bases—the New York Times Information Bank and the Dow Jones News Retrieval Service, for instance—largely repackage and index what is already available in printed form. Other services, including most of the more recent entries, were created for specialized markets. The trend toward specialized, business-oriented information will continue over the next few years. For example, Compuserve and Source Telecomputing, which originally aimed their on-line data bases at hobbyists, are now pushing their services for businessmen and professionals.

Small Computers Will Replace Time-Sharing and Large Computers for Certain Applications

"Many people are not keeping up with the developments in the small computer world," said Richard Dumas. "Microcomputers are on the threshold of replacing time-sharing for many functions. There is lots of software out there and it is increasingly sophisticated. You can use a small computer as an intelligent terminal or as a standalone machine."

"There are some people who will continue to require the power of a large computer, but many can now get by with a small computer," agreed D. T. Wu. "They can do a lot of things a large computer can do. True, they have limitations—a micro may take five minutes to do what a large computer can accomplish in five seconds. But with costs coming down, microcomputers will have a tremendous impact."

"Small computers are the wave of the future," Otto Hammer predicted. "At Ernst & Whinney, we are already able to use Radio Shack and Apple computers off-the-shelf. Many of our offices are buying personal computers on their own. And we are developing applications software for microcomputers. For example, we are trying to take a portion of a program that needs a network, and do some of the calculations locally. The part that requires a large computer is transferred to the network, calculated and sent back to the micro."

A Change Of Emphasis In Commercial Time-Sharing

The coming wave of small computers will force time-sharing companies to adapt or go under. "I see time-sharing networks becoming a means for storing and forwarding information," said Otto Hammer. "We will use the network to transfer data that needs to be shared. And, after we have developed software, we will use the network to send it to our clients' computers, and to update and revise that software. Time-sharing will also be widely used for data base applications where you need central information that can be accessed by all the small computers."

"Time-sharing will continue to be valuable to first-time computer users," added Richard Dumas. "Those individuals won't know what software to buy. They will still turn to time-sharing companies for proven software and for hand-holding support. Likewise, there are still a lot of things a microcomputer can't do—sophisticated manufacturing control or order entry, for example."

"Commercial time-sharing is not going to disappear," said Phil Sussman, "but the nature of its services will change. It will continue to be used to access large external data bases, for massive computer power by firms that don't want a large system in-house, and for individuals who want to rely on others for software development. Indeed, time-sharing will probably move more and more into consulting services."

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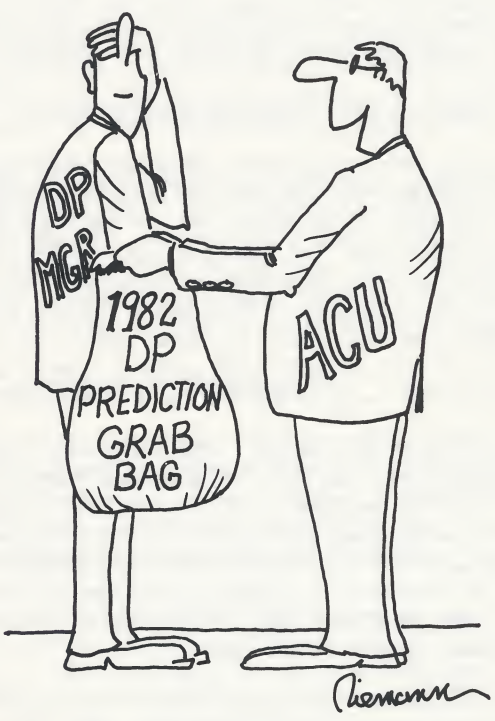

Don't worry—they won't bite!

ACU Members Give Advice: How To Prepare For The Coming Changes

The previous article described developments computer users can expect during the next 12 to 24 months. The next question is: How do I prepare for those changes? Or better yet: How can I take advantage of them? After asking our panel for predictions, we asked them what they were doing to prepare themselves. Where did they plan to concentrate their efforts in 1982? What advice did they have for other computer users? Here are some of their suggestions.

Jump On the Small Computer Bandwagon

Regardless of your area—large computers, time-sharing, word processing—small computers will make an impact during the next year. Our panel agreed that it is time to take microcomputers seriously. "You have to take a look at what your people are doing with large computers and time-sharing now, then decide if it is still the most cost-effective way," advised Philip Sussman. "Often, a small computer will offer immediate savings."

"On the other hand," he warned, "there are some trade-offs to small computers. You certainly spend less money if you get a small computer to replace certain time-sharing applications, but there are hidden costs to in-house equipment. If you use time-sharing, someone else does the maintaining. If you use your own machine, you become your own support group and you become responsible for every task. Still, you should look at everything you are doing or want to do and decide if a small computer would be more cost-effective."

Get Control Of Computer Proliferation

Once you are on the small computer bandwagon, our panel members warned, somebody must take the reins. "You do need to distribute the computing load," said Aram Bedrosian, "but the DP department must be ready to face the onslaught of distributed processing and small computers. If you don't control it quickly enough, you are going to have many incompatible computers out there. You'll have a mess trying to maintain them and communicate between them."

"Many users see small computers and distributed processing as a method of solving their data processing problems," commented William LaRocque. "They jump for something they see on TV. But that leads to users buying gear and then saying 'What am I going to do with it?!' They become very disappointed when they find they can't use their new toys to link up with the central computer to get information."

"The data processing department has to be sensitive to the trend toward small computers, and plan for it," LaRocque said. "Headquarters should set the standards. The users should decide what they want, then go to the technical people, who will help them figure the best way to do it."

Shop With *Communications* In Mind

"Before you buy hardware, ensure that it can be linked to a host computer or to other small computers," suggested Aram Bedrosian. "It is not enough any more to justify new equipment on a standalone basis. If it doesn't communicate it won't do you much good, because very quickly the day will come when you have to link it up."

"Whenever we look at hardware, software or new applications, we consider the communications potential," emphasized Ankarath Unni. "The user must do this largely on his own right now. There is not a lot of knowledge in the field. There are 150 vendors with different systems flying around, but when you ask them about networking or communications or electronic mail they don't really have the answers for you."

Shop With *Standards* In Mind

More and more companies are setting a networking strategy and demanding that new equipment conform. If your firm hasn't taken this step yet, now is the time. For example, at Sun Production Company, said Unni, "we have definitely adapted SNA as the standard. We investigate the networking capability before we buy. We won't look at hardware that isn't SNA compatible."

Expand Into Decision Support

"It's not just what people are doing with computers now, but what people *should* be doing with them," said Philip Sussman. "You must become an advocate for using computers to help managers in the decision-making process—it is crucial in order for computers to fully pay off. Those of us with computer know-how have a massive education job."

"Decision support should be a major concern for many computer users," said Ankarath Unni, who advocates "more use of computers for helping managers make

day-to-day decisions, not just for clerical work. We should make it easier for users to get to the data they need with things like user-oriented databases, and packages for modeling and graphics."

Speed Up Software Development

"Here at TWA," said Aram Bedrosian, "we are facing a reduction in force, yet our DP requirements are as high or higher. We must find ways to get more out of our DP people. We must aggressively move into such things as friendly languages and packages that can be installed quickly. We need to put more information retrieval functions into the hands of users to minimize the amount of programming."

"We must find better software development tools," suggested Otto Hammer. "The traditional languages don't do as effective a job as some of the newer structured languages and the database languages. We must continue to look for ways to provide more reliable software that requires less maintenance."

"The tools for developing software haven't changed much," agreed William LaRocque. "It takes too long to respond to user requests. Moreover, we spend far too much time keeping old applications running or changing them slightly. We must get users in touch in a convenient way with their own files and information. The majority of user requests are quite simple. We must turn to database management systems, applications generators, and software packages."

Investigate Database Management Systems

"Even smaller companies should be keeping their eyes open for database management systems," said Melvin Nimer. "It is a big move for a small company, but most of them are looking for software that you don't have to fuss with, that you don't have to hire programmers to change. A good DBMS can do 90 percent of what you want to do without requiring outside programming."

"You have to be careful, though," he warned. "Most DBMS's have a high overhead and are not efficient. Shop carefully and don't believe everything the salesmen tell you. Talk to users."

"Familiarize yourself with database management systems," repeated William LaRocque, "but don't buy the solution before defining the problem. Remember—DBMS's were heralded years ago as the ultimate answer, but their performance and acceptance have been disappointing. The majority of users still don't use them."

"Now, Gentlemen, what we're shooting for is clarity and precision."

"I think, though, that this will be changing. Much of the movement toward database management may come from the minicomputer world, since many of them now have modestly priced DBMS packages available."

Fight For Every Employee

Don't forget people problems as you prepare yourself for change. "As these changes take place," predicted Robert Jarcik, "one of the biggest challenges will be to maintain the staff and its quality. DP expertise has gotten to be very expensive and hard to find."

"I have four people in my shop now, and the cost is running much more than I should pay, but I can't afford to let them go. It would be too hard for me to compete with the larger firms in the area for replacements. A smaller company must fight for every employee—fight to find and hire the right ones, then fight to keep them."

Be Concerned With Reliability

"With falling prices and all the new developments, many people are too concerned with bells and whistles and not concerned enough with reliability," said Arno Laur. "I think one of the biggest headaches is to make sure the system you put up today will be reliable tomorrow."

"I am concerned whether IBM's cost/performance will stand up," he continued. "With hardware costs coming down, is IBM still going to provide the same level of hardware and support? There is not enough information available about the reliability of the various systems, so users must keep their ears to the ground and talk to each other."

contracts; they can write their own. They *don't* have to rely on vendors' claims; they can refer to ACU's independent Benchmark Reports. They *don't* have to buy from the first dealer that comes along; they have many choices (recent ACU newsletters have given tips on weeding the good from the bad). In short, users are realizing that they don't have to take it any more, and are jumping on the consumerism bandwagon in growing numbers.

What's the price of a ticket? We may be prejudiced, but we think one of the best bargains in town is a membership in ACU. We believe our Benchmark Reports, our journal and our newsletters are far and away the most consumer-oriented, *useful* computer-related publications available. Joining together with other users in ACU is a good way to keep your computer efforts on track.

All aboard! You ***don't*** have to take it anymore.

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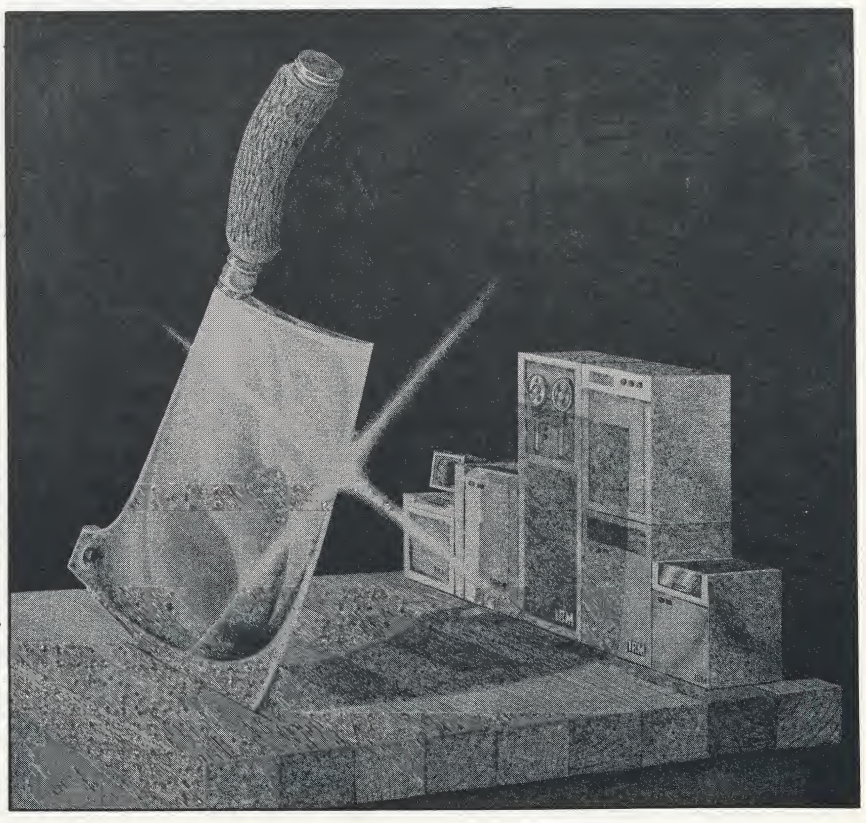


Cover Illustration by Robert Tinney

Should IBM Be Split Up? What's Best For Users?

by Jesse Berst

Computer consumers have been hearing about the antitrust problems of IBM for many years—for well over a decade, in fact, since the U.S. government first charged the firm with violations of the Sherman Antitrust Act. We often read of new lawsuits, legal maneuvers, trial delays and so on. But we rarely see anything written from the ***user*** *point of view.*

There is probably no single issue that is as important to computer users and at the same time so misunderstood. Few of us even know what IBM is accused of; or if the charges are justified; or what we should be doing about it. This article fills the gap; again, from the ***user*** *point of view.*

International Business Machines (IBM) is the world's largest computer company. You knew that already, right? And you probably knew that its influence permeates every field of computer endeavor, no matter how large, how small, how specialized. Indeed, certain individuals believe that only IBM can make a new area "respectable." Until the industry giant blesses a new territory with its presence, many people won't take it seriously; witness such things as mini-computers for general applications, computer graphics for business, CRT-oriented word processing, computer stores and even small business computers.

Here's the rub: some people believe IBM arrived at its position of power at the expense of other computer manufacturers and—more to the point in this discussion—at the expense of computer users. The U.S. government has filed suit, claiming the firm has crushed competition, slowed the pace of innovation and held prices artificially high.

The outcome is vitally important to users. The IBM antitrust issue will affect how much they pay for computers in the future, and, moreover, it may decide whether the computers they buy carry American names like IBM and Burroughs instead of ones like Hitachi and Fujitsu.

Users, then, have a stake in finding out more about the matter. Are the claims against IBM justified? If so, what can we do to protect ourselves against the company's unfair practices? The Justice Department has suggested that the answer lies in splitting IBM up into separate companies, and for the last twelve years it has been trying to do just that. Yet a breakup may not be the best solution. That's not to say, however, that there is nothing users can do on their own behalf. In this article, we will examine the pros and cons of splitting IBM and also consider some alternatives.

Before looking for solutions, however, we need to examine the problem a bit more carefully. IBM is a big target and its enemies have accused it of many crimes over the years, too many to catalog here. Still, in our talks with users and industry insiders we noticed three basic themes. Before we go on to talk about possible solutions, let's zero in on these three accusations to see when—or, indeed, *if*—they pose a genuine threat to users.

"IBM Manipulates The Marketplace To Squeeze Out Competitors"

Twenty-four private antitrust suits have been brought against IBM since 1968. Many have complained about the same type of problem as the Government's case: that IBM's primary motive in product announcements and price-cutting is to bring about losses to other firms. Other suits have similarly alleged that the firm holds back information about new features and equipment so that other companies don't have an equal opportunity to develop competing products.

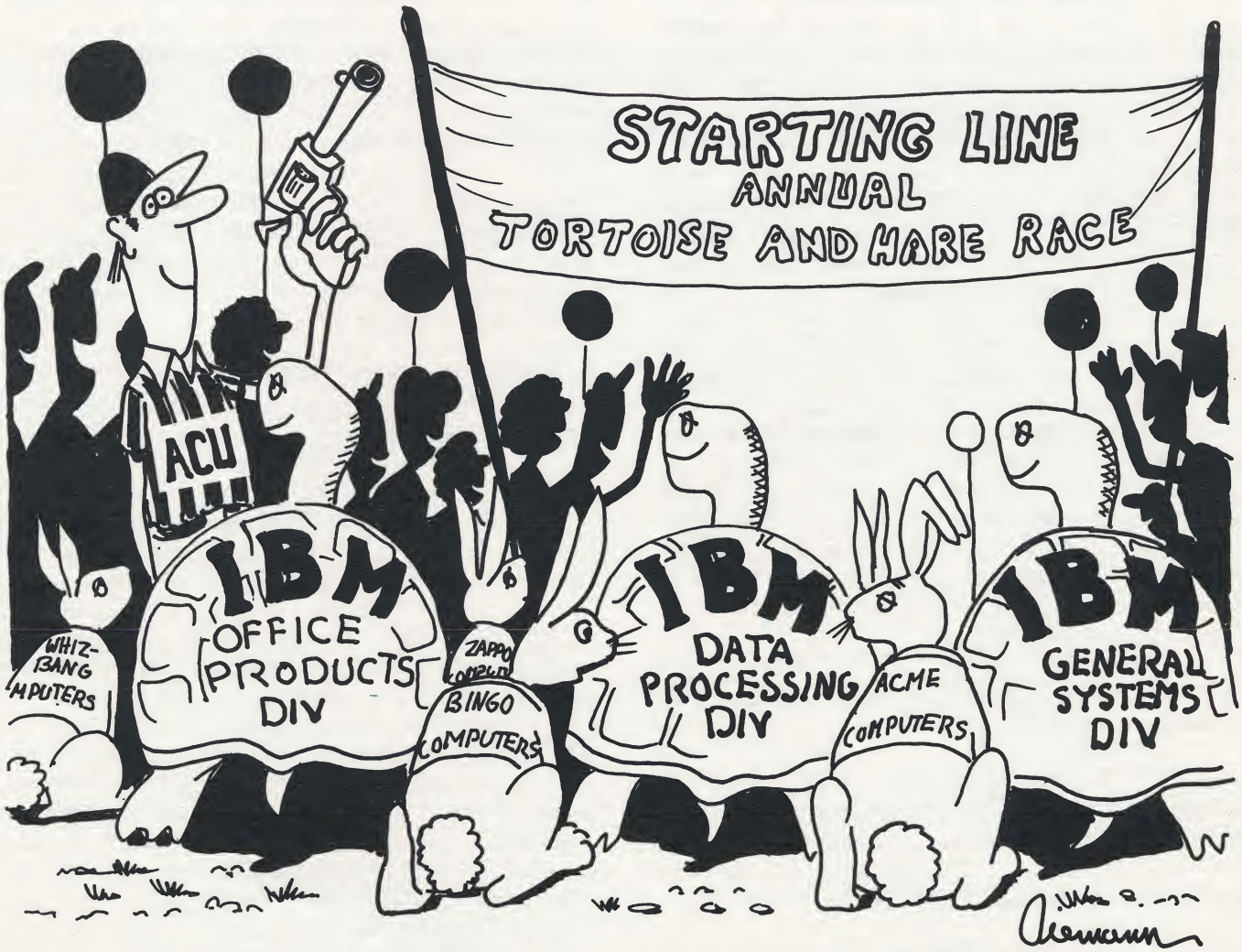
Hard-Where?

IBM has been hearing these complaints almost from its very first days. Competitors have repeatedly accused it of announcing new hardware long before it can actually deliver. Other sellers are

stuck with machines that are suddenly obsolete because customers are waiting for the new IBM product. A related strategy is that of setting prices artificially low. Price reductions come from profits, and IBM has more of those to play with than anyone else in the game.

IBM's introduction of its medium-sized 4300 machines in 1979 is a case in point. The computers had an unexpectedly low price tag, which sent shock waves through the rest of the industry. Indeed, it may have hastened the departure of one competitor from the market. Itel, suffering already from poor management, couldn't survive the pressure generated by IBM's move.

The accusations are not restricted to the mainframe market. Rivals have filed suits relating to



"Do you really think we've got a chance?"

peripherals, supplies, accessories and software. Third-party lessors also allege mistreatment. These organizations buy new or used IBM computers, then lease them to customers for less than the price charged by IBM. They have long list of grievances. They say, for example, that IBM refuses to give them reasonable access to spare parts, which makes it difficult for anyone but IBM to repair the machines.

The list of specific charges goes on and on, but the examples above give you an idea of the central motif. Are these claims justified? One industry observer told ACU he believes that IBM *does* gauge its product announcements to do itself the most good and its competitors the least. But, he pointed out, almost all manufacturers use product announcements as a marketing weapon. True, IBM's clout makes its actions much more devastating, but the industry giant may currently be at a disadvantage in this marketing game. Earlier legal decisions and settlements have made it more difficult for IBM to make "informal" announcements until it is actually ready to take orders.

Do premature product announcements and similar strategies harm users? Yes, if they are "fooled," or if they are locked into buying from IBM and denied the chance to get a better deal on the open marketplace. The verdict on accusation number one: probably guilty in the past, but not of anything other manufacturers don't do; and less prone to do it in today's climate.

"IBM Uses Its Muscle To Push Customers Around"

According to this accusation, IBM, from its position of strength, makes unilateral decisions about contracts, deliveries, and customer safety.

Consumer Complaints

It's certainly true that IBM has been able to get away with non-negotiable contracts that heavily favor its interests at the expense of users' rights. For example, the Computer Dealers And Lessors Association alleges that IBM has refused to pay damages for failing to deliver promised machines, even when it waits until the last minute to inform customers. At the same time, it has required those same customers to pay a cancellation fee if they decide to drop their order. Buyers have had no recourse.

At a recent National Retail Merchants Association data processing conference attended by an ACU representative, one retailer complained to a seminar audience that IBM had used an "end-run strategy" on him. When this mid-level manager made it clear he intended to recommend another make of computer, IBM reportedly attempted to discredit him with top management, using its power and prestige to make him appear uninformed. The industry press has reported similar allegations in Australia and Europe as well as elsewhere in the U.S.

Perhaps IBM's most blatant disregard for consumer rights is reflected in its treatment of the possible cancer-causing effects of a chemical used in some copiers and printers. As ACU president Hillel Segal editorialized in the November 1980 *ACU Bulletin*, "We can think of no more damaging indictment of a company's operations than that they do not adequately protect the public's safety in their product design. And we fully agree that IBM's marketing of these products, after their own studies confirmed possible danger, must be labelled irresponsible."

The list of alleged abuses could go on and on, but we have enough to arrive at a verdict: yes, IBM has probably been irresponsible in their attention to customers' rights. Once again, however, it must be pointed out that IBM is not alone in this, nor even the worst offender. The recent rash of lawsuits against computer manufacturers is ample evidence that conditions are abysmal throughout the industry.

"IBM Is Just Too Big— And That's Dangerous"

This charge stipulates that it doesn't matter if IBM is guilty of accusations one or two, or of any other charges. The important point, they say, is that IBM *could* do such things if it wanted to. Many government lawyers feel that once a corporation hits a certain size it is guilty until proven innocent. Mere size, they contend, bestows monopoly power—and there's no such thing as a good monopolist.

The Badness Of Bigness

There's little question of IBM's dominance of the market. Harvard Professor Hendrik Houthakker, a former member of the Justice Department's team who left because of disagreements, said as much in a 1979 *Wall Street Journal* editorial: "There can be

The Climb To The Top—How IBM Became King Of The Hill

From its origins in the second decade of the 20th Century as the Computer Tabulating and Recording Co., a holding company that made everything from adding machines to cheese slicers, IBM has grown to become the largest producer in the computer industry.

Its early history was shaped by the patriarchal figure of Thomas J. Watson, a former sales manager and executive at the National Cash Register Co. (where he experienced considerable antitrust problems) whose Bible-thumping fundamentalism and evangelic style set the tone of the corporation, which became famous for the strict codes of conduct it imposed on its non-union workforce. Watson would earn a place in business history if for nothing else than the **THINK** signs he ordered placed in IBM offices around the country.

A world leader in the production of tabulating equipment, IBM was somewhat slow in latching on to the advancing computer technology. Its first ventures in that area, the Mark I and Mark II, utilized technology that was made obsolete almost immediately by the creation of the ENIAC at the University of Pennsylvania, which used vacuum tubes. With this new technology, Remington Rand's Univac Division produced the first commercial computer in the late 1940s.

In the mid-1950s, as Thomas Watson Jr. wrested control of IBM from his father, the firm affiliated with the Massachusetts Institute of Technology in a successful effort to catch up with Univac. However, growing competition from such old standbys such as General Electric and RCA, and newcomers like Control Data Corp., forced IBM in the early 1960s to take a bold step: the creation of the 360 series of computers. A compatible, multiple model system using advanced microcircuitry, the 360 computers cut the cost of doing 100,000 calculations from over a dollar to less than a nickel. As the first new generation of computers, the 360 series revolutionized the industry and firmly entrenched IBM as the market leader. The fact that the 360 machines experienced many technical problems led competitors to charge that they were rushed on to the market for the sole purpose of eliminating competition. That is still an issue in the government's antitrust suit against IBM.

Through the 1960s and '70s, IBM evolved from a company dominated by the style of old Thomas Watson (who died in June 1956) into a huge, multinational corporation. Today, there are no longer any Watsons on the Board of Directors or in management positions. The impact of computers on the financial world is immediately apparent from the experience of IBM. It took the company 42 years to achieve its first billion dollar year in 1957. A decade later its sales approached $7 billion. In 1979 its revenues were nearly $23 billion . . . nearly ten times higher than that of its nearest competitor.

—Joe Kelly

no serious doubt that IBM's share of the marketplace was and is about 70 percent, well above the usual standards for monopoly."

Although IBM denies it, most everyone else agrees that the industry giant has all the power that this monopoly position implies. "If they wanted to, they could squeeze out all but two or three of the other mainframe manufacturers," comments Charles Davidson, a veteran of 30 years in the industry and professor of Computer Sciences at the University of Wisconsin. He points out that cash-rich IBM could support a money-losing operation for a long period, simple "out-losing" its rivals.

Is it safe to have all that power concentrated in one place? "Of course not!" responds Davidson. "We are relying on their decision not to use that power. It's not healthy to know that if certain people make certain decisions we'll all be faced with drastic changes." But unhealthy isn't necessarily the same thing as illegal. The law doesn't say you can't be big, just that you can't use unfair methods to get that way. Proving that IBM used foul means to achieve its success is tough—after 12 years the Justice Department still hasn't succeeded. There are plenty of strong emotions about the issue, but little concrete evidence. As Houthakker put it: "We get on more debatable ground when we ask whether IBM's monopoly was merely the result of 'skill, industry and foresight' or also of anti-competitive pressures."

Could it be that we are merely accusing IBM of being more successful than its competitors? Some people think so, and they think the accusation is unjust. Noted author and management consultant Peter Drucker has gone on record as saying, "The government's suit is without merit because what IBM is being charged with is the incompetence of others. IBM's great crime is not that it was a monopolist or even that it was particularly bright, but only that the others were so incompetent."

From the user's point of view, it seems hard to argue that a firm should be punished because its size gives it the *potential* to do harm. Granted, IBM, with its massive resources, has a greater duty of care than other computer companies. An anti-trust agreement that demanded higher standards than from other companies would seem reasonable. But shouldn't IBM be penalized when and if it abuses its power rather than for success in getting it?

The verdict on accusation number three: not guilty for lack of evidence that big equals bad.

Solving The Problems

Although we rendered "verdicts" on the three accusations above, we can't really prove or disprove the various charges brought against IBM. Our purpose was to give you an understanding of the kind of complaints most often made by IBM's customers and competitors.

As we saw, IBM probably doesn't deserve the role that some rivals and some Government attorneys want to give it. It is not the industry's archvillain. Many of the accusations are overblown, and there are other companies that seem to be worse in their treatment of users. But let's not be too quick to dress the giant company in robes of pure white. We came away from our conversations with users and industry experts convinced that IBM has certainly engaged in some questionable practices over the years. With all that smoke, there's bound to be some fire.

How do we put out that fire? Let's consider some alternatives, beginning with the Justice Department's proposal: **divestiture** (the legal term for splitting up the company). Divestiture would mean the division of IBM into three or more (the Computer And Communications Industry Association once proposed 11) independent companies, each with separate manufacturing facilities, sales forces, executives and—most importantly—financial resources.

The U.S. vs. IBM: History's Most Expensive Lawsuit

Twelve double-spaced pages. That's all that was involved in the Justice Department's initial 1969 complaint against IBM. Yet as the years progressed, those twelve gave birth to thousands, then hundreds of thousands, then millions of other pages. Along the way, they've mushroomed into a monumental antitrust case that portends fundamental changes in the American judicial system.

How did the U.S. government and IBM end up mired in this never-ending case? And what has been the result of this twelve year marathon—besides fostering a big increase in the number of rich lawyers?

The Justice Department had not fully completed its investigation of IBM at the time of the original complaint, but Attorney General Ramsey Clark believed there was sufficient evidence to suggest a violation of the Sherman Antitrust Act. Besides, it was the final day of the Johnson Administration; if Clark's team hadn't filed then they would have lost their chance.

Very little happened in the years immediately following the filing. The new administration of Richard Nixon didn't want this orphan from the Johnson era; Nixon's team was ill-disposed to antitrust efforts, involving IBM or anyone else. During this time, attorneys for both sides spent much of their time wrangling over the definition of the issues.

As the case evolved, IBM was accused of exercising a monopoly over the computer industry and of obtaining and preserving that position with anti-competitive practices. Those practices, the government said, included announcing the introduction of new products before they were ready to deliver, in order to lessen the demand for competitors' machines by making them seem obsolete; the bundling of hardware and software (so customers had to buy one to get the other); and unfair domination of the educational market (locking in universities by supplying the first computer at very low prices). Later the charges were amended to include IBM's activities against the so-called plug-compatible manufacturers.

No wonder IBM came under suspicion; the industry giant's annual revenues are typically *ten* times higher than those of its nearest competitor. Despite that overwhelming advantage, IBM maintains that it faces stiff competition from hundreds of companies in the young and growing computer industry. Finally, on May 19, 1975, six years after the complaint was originally filed, the trial that was supposed to decide who was right got underway. At the time, observers predicted it would last a year. Now, after six years, 15,000 exhibits and 100,000 pages of trial transcript, it appears that round one is coming to a close—with no settlement in sight.

Why has it dragged on so long? Partly because the issues are complicated. It's not easy to define "monopoly", much less prove it exists. But the issues aren't as complicated as IBM's lawyers have made them, and here's where the huge company has an advantage over the government: competence. Tom Barr, the firm's lead attorney, has represented IBM since the late 1960s. He has an intimate knowledge of the industry and he can call on a huge staff. By contrast, the government's top man has changed three times; no one remains who has been on the case since the beginning. Even the most forgiving observers say that the government has consistently mismanaged the case.

Bleak IBM

Even presuming that the trial finally ends this year, the judge estimates he'll need 12 months to review the voluminous proceedings and render a decision. Then, of course, the loser is almost certain to appeal. And if, after appealing all the way to the Supreme Court, IBM should finally lose, another trial must be conducted to determine how the company should be penalized. In fact, the whole mess reminds one of the case from the Charles Dicken's classic, *Bleak House*. In that case, all the original litigants died and their descendants ran out of money for attorneys' fees before matters were finally brought to a halt.

Thanks to Bleak IBM, the Sherman Antitrust Act will never be the same. Yale professor Robert Bork told *Time* magazine that the frustrating case is "the antitrust division's Vietnam." Together with other endurance contests like the AT&T matter, the case has proved so unmanageable as to raise doubts if our courts can resolve it. A dozen years; mountains of documents; millions of dollars . . . it's the most expensive case in history. If anything, the IBM case has shown that modern corporations are different than the robber barons that prevailed in Sherman's day. New laws and new ways are needed to deal with them.

—Joe Kelly

There is something to be said for splitting up IBM. Much of the pricing turbulence and uncertainty that has gripped users over the last 10 years stems from cash-rich IBM being impervious to the market considerations that rule other companies. Divestiture might stop this, and bring prices down in the bargain; the existence of competitive research departments should spawn innovation and exert a downward pressure on prices. And there's another reason to favor divestiture, or at least a continuation of the Government's efforts in this direction: experts believe that the threat of antitrust action has kept IBM on its best behavior in recent years.

The Arguments Against Splitting

On the other hand, there are powerful arguments against divestiture. In the opinion of many industry analysts, the United States would not lead the world in computers if it weren't for IBM. Even the Computer Dealer and Lessors Association, which has been yelling long and loud for regulations to limit IBM's powers, argues against breaking the company up. In a letter to the Justice Department, the Association said it did not believe that "it would be necessary, advisable nor in the best interests of the data processing industry, including computer 'consumers,' to destroy or weaken IBM's manufacturing or research functions or split them up into dwarf IBMs . . . "

In addition, there is no hard evidence that splitting IBM would solve the problems that users complain of most. It could even make things worse, turning loose several hungry IBM sharks instead of one complacent IBM whale. And it certainly would have no effect on other manufacturers who use unfair tactics; they would be free to continue business as usual. Furthermore, the accompanying story about the trial points out that it will probably be many years before there is any resolution. From the user's point of view, then, divestiture has little value and even less chance of happening soon.

Other Solutions

Just because a break-up is not practical or advisable does not mean that IBM should be left to its own devices. Although most users and competitors don't believe in divestiture, they do feel they should be protected against IBM's undue exploitation of its power.

What's the best way to do that? There is one way in which big government might help counter the threat of big IBM: by compromising. To date, the Justice Department has shown no willingness to compromise. Yet many of IBM's competitors don't even want divestiture. They want regulations and consent decrees to enforce fair competition. Such regulations would probably be more helpful to users than splitting the company, and a compromise settlement would have the further advantage of being attainable in the near future.

There are other partial answers. Professor Davidson for one, advocates strong consumer protection, particularly for contracts. "If a car came with as many defects as the average computer system," he claims, "consumer advocates would be up in arms!" Davidson's suggestion has the advantage of protecting users not only against IBM, but against *any* manufacturer who attempts to take unfair advantage of buyers.

We are seeing some progress in this area. A few states have passed protective legislation, and performance clauses in government agency contracts are leading the way toward less one-sided agreements. Although IBM has kicked and screamed, it is beginning to rethink its previous policy of refusing to bid on such contracts. Nor are government agencies the only organizations that are becoming more consumer-minded. Business firms are becoming more aggressive about demanding protective clauses in their contracts, and are going to court to enforce those contracts if necessary. Several newsletters and consulting firms have sprung up that specialize in helping computer buyers drive a hard bargain.

Still, when speaking of solutions, several experts pointed out that users are ultimately their own best protection—against any seller. Buyers should know

what to look for, should realize that there are alternative machines available, should understand that they *don't* have to accept the standard contract. With the wealth of available information and the number of working consultants, there is really no reason not to know what you are talking about—or to hire someone who does—*before* you sign on the dotted line. When knowledgeable customers then band together—in users' groups, in organizations like ACU, in class-action lawsuits—they can have real clout. The best assurance against unfair treatment is a united watchdog group of informed users.

The Future Of The Once King

So much for what *should* happen. What's the actual prognosis? Will IBM be split up? Not likely. A decision is probably years away. Even if a judgement were handed down tomorrow, IBM has the legal resources to postpone implementation for years through appeals. It looks as if IBM will survive the attacks of the trustbusters, and continue as the world's number one computer company. Although signs indicate that King Computer is slowly slipping from the throne, the organization has what it takes to stay on top for a long time to come.

While it is there, it will probably continue to be both one of the best and one of the worst of the vendors. At its best it offers the ultimate in customer hand-holding. At its worse, it becomes high-handed instead. Our closer look at the IBM case has revealed that some of the accusations against the world's largest computer company are unfounded; in other cases it may well have exploited its dominant position. But we also saw that splitting the company up is unlikely to provide users any relief. Other solutions have more practical benefits for computer consumers.

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